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ABSTRACT

This report is a detailed analysis of business practices within the Massachusetts public school system. It is the result of a three-month examination and evaluation of Massachusetts' schools by a volunteer task force of 33 corporation executives and managers. The evaluations and recommendations are organized into four major sections of the report. Section 1 summarizes the principal findings and recommendations of the task force; section 2 discusses the need for long-range planning, school district cooperation, and a statewide management information system; section 3 examines the issues of school funding, manpower, and facilities; and section 4 discusses different aspects of a school business management system, including fiscal management, facilities planning and acquisition, facilities operation and maintenance, transportation, materials procurement, food service, information systems, and interfacing systems. In addition, there is a bibliography of publications relevant to various school management topics, as well as a topical index of subjects discussed throughout the report. (JG)

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REPORT OF THE MASSACHUSETTS BUSINESS TASK FORCE FOR SCHOOL MANAGEMENT

EA 007 303

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MASSACHUSETTS ADVISORY COUNCIL ON EDUCATION

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December 1970

Massachusetts Business Task Force for School Management

September 1970

Dr. William C. Gaige
Director of Research
The Commonwealth of Massachusetts
Advisory Council on Education
13th Floor - 182 Tremont Street
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Dear Dr. Gaige:

We submit this report on school business management with a firm belief in the efficacy of our recommendations and the deep desire to be helpful in their implementation. Almost every school system in the state has been consulted and members of the Task Force personally visited some 200 systems. During these visits, we talked with superintendents, business managers, principals, consultants, and other members of school staffs. Many of their suggestions are included in the report.

We found much dedication but also much frustration. Almost everyone was of the opinion that the Department of Education should provide professional assistance in critical business areas. There were clear indications of the need for stronger state-wide leadership, more effective planning, better communications, more cooperation between school districts, and broader application of management systems. The implementation of our recommendations will correct this situation and bring about substantial economies. We urge all concerned to support actively the effort to achieve early implementation of these recommendations.

It is impossible for us to overemphasize the willing and friendly cooperation that we have received from all those whom we contacted during the course of the study. This has been an envigorating, challenging, and enlightening task. If opportunities can be found for more of our fellow citizens to experience the satisfactions that accrue from public service of this kind, we think great benefits can accrue to the Commonwealth.

Respectfully yours,

Carl H. Nordstrom

Carl H. Nordstrom
Chairman

A study of the Advisory Council on Education in collaboration with the Associated Industries of Massachusetts
Directed by Warren King and Associates, Inc., Chicago

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Introduction

The Advisory Council on Education presents this unique and important analysis of business practices in the billion-dollar public school system of Massachusetts. The report speaks authoritatively because it was compiled by 33 top corporation executives and managers who devoted more than three months, on a full-time basis, to an evaluation of the public schools. Modern American corporate management, the finest in the world, uses the most accurate and sophisticated tools. The extent and goals of the public school system make it perhaps the best in the world, but its business and management practices are fragmented into hundreds of small, insufficient units. Even the large systems are often inefficient. In Massachusetts school systems, only half have business officers, and these are often inadequately prepared. In the other half, the superintendents must serve as their own business officers. In addition, many school business functions are conducted by city and town governments beyond the control of school systems.

In these days of rapidly rising taxes and costs, it is unlikely that school costs can actually be reduced. However, the use of efficient modern management practices can save millions of dollars and arrest the rapid growth rate of increasing costs. The council began exploring the possibility of such savings two years ago but quickly discovered that it alone did not have the financial resources to conduct the study. First, it requested the services of the Associated Industries of Massachusetts for the recruitment, on loan, of business managers from successful corporations. AIM accepted the challenge and did recruit the loaned corporation executives. Second, it engaged the management consulting firm of Warren King and Associates, Inc., to assist these executives in examining problems of public management.

The cost of planning, equipping, and managing the study, as well as editing and printing the report, totals $75,000 in the council funds. The value of the services of the loaned executives, whose salaries and expenses were paid by their companies, exceeds $200,000. Through the efforts of the Associated Industries of Massachusetts, many companies donated money, office space, supplies, equipment, and printing valued in excess of $20,000. In addition, school business officers requested that how-to-do-it manuals be prepared in certain areas. The Commissioner of Education earmarked $15,000 of Title V federal funds to cover the cost of preparing, editing, and printing two manuals, one on school purchasing and another on pupil transportation. It is hoped that the Department of Education can keep these manuals up-to-date and develop others. Thus, the Commonwealth has received services valued at over $300,000, of which the state has contributed only $75,000.

But there is an additional important and intangible promise resulting from this study. Nearly half of all Commonwealth school systems were visited, and their superintendents and business officers were invariably enthusiastic and appreciative. Moreover, the loaned executives found that these educational leaders are carrying heavy responsibilities, often with inadequate management training and insufficient help. As a result, there is a new understanding between an important portion of the business community and large numbers of public school executives. Now, it is quite possible that school systems can obtain the advice, assistance, and support of business leaders throughout the Commonwealth in securing the resources and services needed to assure competent school management.

The most brilliant findings of any study are useless if the recommendations are not effected. Moreover, project results are seldom implemented unless those being studied understand the need and cooperate wholeheartedly. In this case, super-

intendents and school business officers throughout the Commonwealth were contacted prior to the start of the study. These men were unanimous in asking for help and in supporting the council's effort to initiate the project. Further, their associations were fully supportive during the conduct of the program.

As the results so clearly reveal, improvement of business practices and implementation of modern management methods require state and regional leadership. Most school systems, even sizable cities, cannot individually afford all the services and resources that will assure efficiency and economy. State and regional leadership and services must be provided by the State Department of Education, and the Governor and the Legislature must authorize and support such leadership and services. Although the advantages of local control must be treasured, the taxpayers can no longer afford its costly disadvantages. The loaned executives, themselves local citizens, clearly restate these premises and forcefully present recommendations in support of state leadership and school district cooperation.

The original investigations indicated possible annual savings of $30-million to $60-million. However, before appreciable savings can be assured, the teams of managers state clearly that relatively small amounts of money must be spent to provide needed knowledge, staff, and services. Only then can larger sums be saved. Although maximum dollar savings are not estimated for many recommendations, their full and early adoption could assure annual savings of more than $60-million. In addition, the quality of education and learning would be greatly enhanced.

The Advisory Council on Education gratefully acknowledges the support and cooperation it has received from all agencies and individuals concerned with this study. Also, on behalf of the Governor and the Legislature, the council expresses its deep appreciation to the companies which so generously donated their executives and other resources. Moreover, it is grateful to the Associated Industries of Massachusetts and its staff, without whose support and services the study could not have been conducted.

Finally, the Advisory Council on Education transmits these findings and recommendations to the political leaders, the State Board of Education and its department, the school committees and school systems of the Commonwealth, and the state and local officials so intimately involved. It urges all to study these findings and recommendations and to play their appropriate role in developing the efficiency and economy needed to assure high-quality education at the lowest possible cost.

Dr. William C. Gaige
Director of Research,
Massachusetts Advisory
Council on Education
September, 1970

SECTION I

Principal Findings and Recommendation Summary

Principal Findings

Any billion-dollar operation—and that is the present-day scope of public primary and secondary education in Massachusetts—must be regarded as big business. Consider its massive physical plant facilities and thousands of professional and support personnel. Think of the growing fleets of busses; inventories of supplies, books, and equipment; athletic and recreation programs; maintenance and new construction; health and food services; recordkeeping and reporting requirements; and wide geographic coverage. Add to these a new era of collective bargaining and persistent demands for better and more comprehensive services. With the application of the management concepts fundamental to efficient and productive operation, the analogy to big business is complete.

Although the resources devoted to public school education are large, they are managed in a fragmented fashion. There is little coordination at the state level and almost no interchange of information, formal or informal, between school districts. The Massachusetts Business Task Force for School Management found widely varying procedures. Good practices in one district were not being used to advantage by neighboring districts with similar problems, because there is no organized method for exchanging such information.

Effective working relationships between school committees and school administrators exist in many districts, but in others policies are vague and limits of executive authority unclear. Delegation of responsibilities and basic organizational structure simply do not exist in some smaller systems. Too often, day-to-day problems are dealt with on an ad hoc basis.

The Task Force found instances where sound and systematic management practices have been introduced into local school systems. Actually, there are no inherent obstacles to the initiation and application of modern business methods and management systems throughout the Commonwealth—if local school districts are given the tools, guidance, and community support.

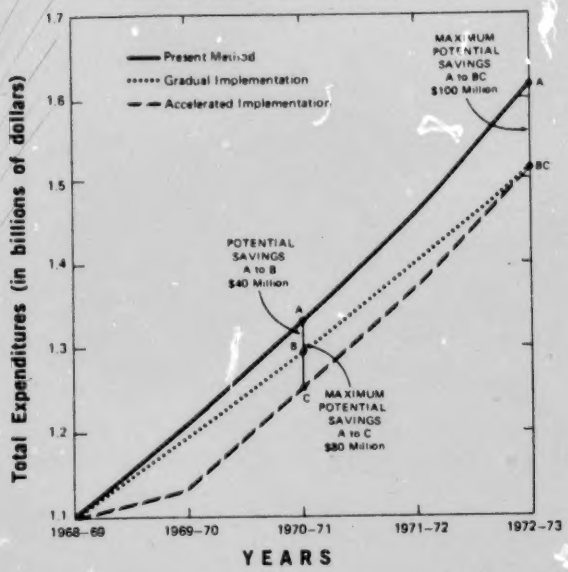
There are many benefits to be derived from the implementation of the Task Force recommendations. The most important of these is the leadership that can be exercised through the prudent use of the recommended management tools.

Other benefits are those resulting from improved efficiency and productivity of personnel in performing their duties under the proposed management system. In most cases, no estimate was made of the dollar value of such benefits. Dollar benefits were estimated in connection with 25 recommendations. They are not additive because in some areas options are available. For example, in the transportation area, a school district can either contract for bus services or own and operate its own busses; cities and towns can either modernize existing buildings or contract for new ones.

The Task Force believes the implementation of their recommendations can result in a reduction of total expenditures (operating plus construction) equal to 6% of the total expenditures that would be incurred under the present system of operation. The 6% reduction does not take into account the effect on total expenditures of complete school district cooperation. When that is accomplished, a 10% reduction can be anticipated. These reductions are the dollar benefits to be derived from the implementation effort.

During the past four years, public school operating expenditures have increased about 13% per year over the preceding year, and construction costs at least 10% per year over the preceding year. Total expenditures for the 1968-69 school year were approximately $1.1-billion. The pro-

STATE SECONDARY AND PRIMARY SCHOOL TOTAL EXPENDITURE PROJECTIONS



jected expenditures for the next four school years, assuming a conservative increase of 10% per year over the preceding year, is illustrated in the solid line in the graph shown above.

The broken lines show the effect of the rate of implementation on dollar benefits. The lower line is based on the assumption that implementation is already in effect and the achievable 6% reduction was reached at the beginning of the 1969-70 school year. The middle line is based on the assumption of a gradual implementation with a 1.5% reduction for the 1969-70 school year, 3% for 1970-71, 4.5% for 1971-72, and 6% for 1972-73. The vertical distance between the respective lines portrays an estimate of the potential reductions in expenditures resulting from gradual or accelerated implementation as compared to no implementation progress. It is obvious that delays in implementation can be very expensive.

Costs will be incurred in effecting full implementation. The Task Force estimates that the Department of Education will need an additional appropriation of approximately $1.1-million to engage the professional staff and the services necessary to carry out its very essential role in the implementation effort. No estimate has been made of costs to local districts. It is certain, however, that they will be significantly greater if the Department of Education is unable to provide the leadership and professional assistance that the local districts can rightfully expect.

Critical Needs

The absence of several key elements essential to effective management was evident throughout the study conducted by the Task Force. These are summarized in this section.

Long-Range Planning

Formal long-range planning should be initiated at both the local and state levels. Five-year plans should be prepared annually because updating at least that often is essential to keep pace with changing conditions. Long-range planning is not a static function but an evolutionary process—that fact clearly is not recognized by the educational community in Massachusetts.

There are many developments which can affect the future of education. Executives must evaluate these developments and make decisions which will enable them to react to change effectively as well as to contingency and crisis. Such decisions are critical and the Task Force believes strongly that they cannot be made wisely without the kinds of information and guidance which long-range planning provides.

School District Cooperation

Optimum economic size is one important characteristic of a successful district operation. However, many local school systems in Massachusetts are not large enough to obtain the most effective educational return for the dollars expended. Inescapably, conditions today require more cooperation between school systems and on a larger scale than has been envisioned in Massachusetts. Methods of achieving this vary, but regardless of method, the Department of Education must provide a unified policy and adequate communications.

Without increased cooperation between school districts, Commonwealth taxpayers must be resigned to continued duplication of costs, competition for tax dollars and personnel, as well as an unbalanced educational system frequently favoring the better financed communities.

Local control has been traditional in Massachusetts education, but such control, as we know it today, suffers in a fragmented system. Local units often are uneconomical in operation and politically impotent. A system which combines central

leadership with strong centers of local control will produce significant economies, cut waste, and offer the additional benefits of greater scholastic challenges and special programs. In addition, it will provide better facilities and management, as well as financially self-sufficient local school groupings whose voters can truly control the important aspects of their children's education.

The Task Force examined and considered in great detail the history, status, problems, and benefits of school district cooperation. After discussing the issues at length, it recommends a transition towards larger districts in a manner which should prove beneficial and acceptable to the local communities.

Management Information System—State

There is also a need for a centrally administered information system involving the coordinated efforts of the Office of Planning and Program Coordination, the Department of Education, as well as users and contributors of educational information. An Advisory Committee should be established to oversee the activities of the Massachusetts Educational Management Information System, determine acceptable project priorities, and ensure that the full capabilities of the system are made available to its constituents.

It is imperative that the Department of Education be able to describe the current and future needs of the users of educational information. Additionally, it should have a plan for an information system to tie in with the larger state system and begin implementation where it is economically feasible as soon as possible. This will require a study of the needs for management information, the design of a data base, as well as documented computer programs.

Resources for Public School Education

Sound management of three basic resources—funding, manpower, and facilities—is essential for an effective public school system operation. The paragraphs below summarize the content of these sections.

Funding

Massachusetts taxpayers are plagued by the current imbalance between the support to education provided by local property taxes and the more broadly based state support. Aggravated by rising costs, taxpayers have reacted by restricting resources for local education.

The questions of state aid and local funding are complex, and involve many aspects beyond the purview of this management study. However, from a business standpoint, it is obvious that many schools are operating inefficiently because of inadequate funding. Therefore, the General Court should give prompt and serious consideration to findings of the various expert groups who have recently studied this problem.

Manpower

Manpower is an indispensable and critical resource for education. The Department of Education, as presently funded and organized, cannot make the fullest and most effective use of this resource and is not in a position to implement many of the recommendations in this report. The General Court should fund this department adequately and give it the authority to select, compensate, and classify its professional staff within the overall limits of its budget. If not, consideration should be given to deactivating the Department of Education.

Assuming that adequate funding is made available, the department should establish an expanded Bureau of School Management Services. This organization would assist all school districts in questions of building operation and maintenance, collective bargaining, data processing, program budgeting, purchasing, transportation, and volunteer manpower.

The department should also appoint a professional administrator in the Office of the Commissioner to direct departmental communications and to plan and execute a long-range public relations program. Communications are an essential tool and function of modern management. It is vital for public understanding and support of the educational system. Yet, the Massachusetts Department of Education now has no effective communications program.

School districts should solicit support from local business and industrial organizations to assist in special instructional areas and administrative matters. Some districts are now deriving benefits from this approach, and the practice should be expanded.

School costs have been impacted heavily in recent years by collective bargaining. In general, the

bargaining units in the school system have been represented by professional negotiators. The Task Force strongly recommends that the school committees secure similar representation. In any case, the negotiations should not be conducted by inexperienced personnel.

Facilities

School building is the biggest construction business in Massachusetts—about 4-million square feet each year—but it also is the most fragmented in terms of management. Experiences gained in one community are seldom shared with another. In addition, the benefits of mass buying and standardization of methods are not realized. School building problems are being compounded as parochial schools continue to close.

Innovation in construction methods is one of the most powerful means of combating high costs. The Department of Education should promote strongly the development of modular systems construction. There is an urgent need for the Department of Education to provide coordination and expanded assistance in all areas of school construction, including cost savings analysis, site planning, building design, architectural planning, and a central data bank.

Other Task Force recommendations for reducing school building costs call for the General Court to establish a central state contracting agency and for the towns to expand the use of stabilization funds for school construction. The latter approach would eliminate or reduce expenditures for bond issues which can amount to as much as two-thirds of construction costs.

Finally, in this expensive and vital area of school construction, educational and town planners must recognize the premium on time. A three-year delay can increase the cost of a building by one-third. Long-range planning would avoid this delay, and would result in buildings being constructed when they actually are required by the local system—not two or three years later, as has been the usual experience in Massachusetts.

School Business Management System

The operating problems confronting school district business managers as well as other interfacing activities are highlighted in the following paragraphs.

Fiscal System

The Task Force recognized the need to modify and standardize educational budget content and preparation procedures to obtain greater public understanding of the objectives of school programs. Budgeting by objectives rather than by function provides opportunities for decision-making on the basis of priorities. In addition, uniform formats would facilitate comparisons between systems and measurements of performance against stated goals. After budget component costs and revenue sources have been properly identified, the budget should be approved as one total. This would permit the superintendent to make transfers freely within the overall budget.

The greater accountability provided by program budgeting and performance comparisons should make this increased flexibility acceptable from the standpoint of control. The temptation to make unnecessary expenditures, in order to avoid returning unspent monies to the general funds of the community would be greatly reduced.

Facilities Planning and Acquisition System

Long-range facilities planning by the school districts must be improved, if they are to meet successfully the problems of increasing pupil population, rising construction and land costs, and parochial school closings. The Department of Education should be funded to a level at which it can provide assistance to town school planners. As part of this assistance, the department should develop, in cooperation with the towns, standard criteria and formats for space utilization records, so that emerging space needs can be clearly identified and justified to the taxpayers.

Facilities Operation and Maintenance System

The Task Force's review of this key area disclosed a serious lack of effective custodial training programs for establishing and maintaining adequate skill levels among the more than 6,000 custodians in the public school system. Such programs would combine on-the-job training, a custodian's handbook, and improved custodial supervision, which would incorporate comprehensive scheduling based on work measurement techniques. Performance time standards would provide uniform

schedules for all custodial tasks and establish a more even distribution of work loads among employees. The Department of Education is now prepared to conduct training programs, upon request from any town. Such action would bring a rapid improvement in efficiency.

Maintenance management of physical facilities in many school systems is ineffective. In some cases, this is because maintenance responsibility is assigned outside the school's authority. In other instances, maintenance management expertise among local school administrators is limited. In general, preventive maintenance programs are either inadequate or nonexistent. These conditions jeopardize the long-term serviceability of school facilities throughout the Commonwealth. Prompt action is required if this potential waste of the taxpayers' money is to be stopped.

Transportation System

Review of the Commonwealth's numerous school transportation systems, which serve 500,000 pupils with more than 4,200 vehicles, disclosed opportunities for significant cost reductions. The greatest opportunity for achieving transportation economy is through combining individual school districts into larger area transportation facilities, which would be administered by transportation specialists, and through eventual public ownership and operation of bus fleets.

The Department of Education should provide expert and timely guidance to the local districts and area specialists so that effective and economical transportation systems can be implemented. Such assistance should encourage more cooperative arrangements between school districts where transportation is required for special purposes such as vocational and technical schools. Assistance in the form of centrally developed computer routing and scheduling and the establishment of pupil pick-up stations, bus and driver standards, effective service complaint processing procedures, formal rules of pupil conduct, and procedures for reporting and reviewing rule violations should also be given.

When transportation services are contracted, bids and proposed contracts should be analyzed and approved at the state level. Furthermore, state-developed forms and procedures should be utilized, and performance bonds should be required as an integral part of every request for bid and transportation contract. Moreover, legislation is required to enable school committees to negotiate contracts of longer duration to effect cost savings.

Local transportation cost reimbursement by the state should be limited to a maximum cost per pupil to ensure maximum effort to effect economical transportation. Finally, the operating manual on pupil transportation prepared by the Task Force should receive wide distribution in the school districts.

Procurement System

A uniform business system for purchasing at the local level is critically needed, so the Task Force prepared a school purchasing manual to meet day-to-day operating requirements. Furthermore, a procurement specialist position should be established in the Bureau of School Management Services to coordinate purchasing activities and disseminate information among Commonwealth school districts. Since lower prices inevitably result from higher-volume procurement and administrative cost reductions are achieved when several schools are served by a single advertising and bidding procedure, cooperative purchasing should be developed on a regional basis.

School districts should also be informed of commodities available under state contracts, and the State Purchasing Office should encourage them to use such contracts. A serious lack of communication among local school districts and the State Purchasing Office now hinders this process; this gap should be bridged immediately. Incorporation of large-volume school requirements into state purchasing orders would result in lower prices for all state agencies.

School Food Services System

The Task Force believes substantial improvements in the Commonwealth's school lunch program would result from the creation of a Division of Nutrition Education and School Foods Services within the Department of Education. This division would provide financial and technical assistance to the local districts, handle government commodity distribution for the schools and eventually other institutions, and provide innovative and creative nutrition education.

However, the greatest economies could be achieved by using central kitchens to serve more than one school, and the division should actively promote this concept. In addition, the state should take full advantage of government-donated commodities by contracting the processing of this food for conversion into finished products for resale to various school district systems.

Management Information System – Local

It is essential that the Commonwealth have a statewide management information system. Therefore, the local districts should participate in its develop-

ment in coordination with the Department of Education, whose functions in the system have been described previously.

The Task Force suggests a one-year moratorium on the addition of data processing equipment. During this period, the Department of Education will establish the input-output configuration of the system. Thereafter, as mutually agreed, the local districts and the department should cooperate in the development testing and implementation of the system.

Interfacing Systems

The Task Force has defined interfacing systems as those which govern functions which are not generally considered in the business area, but which depend on the business area for services such as purchasing and budgeting. Such functions are insurance; attendance, health, and library services; property and inventory control; and the like.

Many disparities were observed among the school districts' vast array of insurance programs. Direction and coordination are required at the state level to ensure adequate protection of school district property and personnel and to achieve the economies that group rates provide. The cost of attendance services could be reduced by conducting the school census and street-list canvasses simultaneously. Finally, important financial and educational benefits could be achieved by coordinating the purchasing and processing of library materials on a regional basis.

Recommendation Summary

RECOMMENDATIONS	SECTION	RECOMMENDATION NUMBER	PAGE
General Court Action			
Consider the findings and recommendations of the various individuals and groups that have studied the school funding problem, and take appropriate action.	III—Funding	1	27
****Grant the Department of Education authority to select, compensate, and classify their professional staff within overall limits of its budget.**	III—Manpower	1	31
Grant school committees responsibility for insurance coverage on school buildings and contents.	III—Manpower	4	32
Invest full authority for purchasing supplies and services used in the school district with the school committee.	III—Manpower	5	32
Authorize the school committees in all towns and cities in the Commonwealth to maintain the school buildings.	III—Manpower	7	33
Permit school districts to keep their own books of account or contract this function to the parent town or city.	III—Manpower	8	33
Require the town treasurer to pay promptly and without further authorization all purchase orders and requisitions on certification by the school committee or its appointed representative providing the amount due and payable is within the approved budget.	III—Manpower	9	33

***Top priority*

RECOMMENDATIONS	SECTION	RECOMMENDATION NUMBER	PAGE
Authorize the school committees to delegate executive authority to the superintendent.	III—Manpower	10	33
Exclude principals and assistant principals from any collective bargaining unit.	III—Manpower	17	37
Establish a central state agency to contract for construction of all elementary and secondary public school buildings.	III—Facilities	2	39
Use the Commonwealth's credit rating to minimize bond interest costs.	III—Facilities	3	40
Require all school committees to submit budgets that are program-oriented rather than function-oriented.	IV—Fiscal System	1	46
Require school budgets to display revenue sources and contributed services, all anticipated expenditures for whatever purposes within or without the school system, and indicate the net amount to be raised by local taxation.	IV—Fiscal System	3	46
Provide for periodic destruction of records.	IV—Fiscal System	5	47
Permit school districts to advance funds in anticipation of payment by state or federal authorities for projects which have been properly approved.	IV—Fiscal System	7	47
Establish a limitation on state financial aid for school construction projects.	IV—Facilities Planning and Acquisition System	12	55
Permit the use of a base bid and alternate specifications.	IV—Facilities Planning and Acquisition System	15	55
Enable and encourage school committees to consider and negotiate bus contracts for periods of longer than the presently allowed three years.	IV—Transportation System	10	67
Limit state reimbursements to school districts for pupil transportation costs.	IV—Transportation System	13	69
Require municipalities which do not carry primary insurance on their buildings and contents to purchase excess-loss coverage.	IV—Interfacing Systems	2	85
Amend the Workmen's Compensation Act to make mandatory the provisions of the law to all local and regional district school system employees.	IV—Interfacing Systems	3	86
Require municipalities not insured against liability for Workmen's Compensation to carry single accident excess insurance or reinsurance.	IV—Interfacing Systems	4	86

RECOMMENDATIONS	SECTION	RECOMMENDATION NUMBER	PAGE
Extend indemnification to all employees for expenses or damages resulting from an accident due to their own negligence arising out of their employment.	IV—Interfacing Systems	5	86
Require that all municipalities provide general insurance, including products and vehicle liability protection, with a minimum combined limit of $1-million per occurrence either by securing primary insurance or purchasing appropriate excess insurance coverage above a retention for each occurrence.	IV—Interfacing Systems	6	86
Create a state trusteeship which will be the insuring entity for the single packaging of group health and life insurance for all school employees and other municipal and county employees.	IV—Interfacing Systems	7	86
Allow the school census and town listings to be taken simultaneously and require town officials responsible for compiling street lists to collect information on all residents.	IV—Interfacing Systems	8	88
Base local school aid on pupil enrollment for October 1 rather than on net average membership attendance by amending Chapter 70, Section 4 of the General Laws.	IV—Interfacing Systems	10	88
Department of Education Action			
****Prepare and annually submit a five-year plan to the Board of Education for action, beginning in 1971.**	II—Long-Range Planning	2	19
****Establish an office, designated as the Office of School District Cooperation, reporting directly to the Commissioner, with exclusive responsibility to promote and coordinate school district cooperation.**	II—School District Cooperation	1	21
****Establish, with appropriate funding from the General Court, a Massachusetts Educational Management Information System (MEMIS).**	II—Management Information System—State	1	24
****Establish an advisory committee on information systems for education.**	II—Management Information System—State	2	25
****Activate immediately an expanded Bureau of School Management Services within the Massachusetts Department of Education.**	III—Manpower	2	31
Engage a professional administrator to direct communications within the department and create a proposed Office for Communications with responsibility for planning and executing a long-range public information program.	III—Manpower	3	31

**Top priority

RECOMMENDATIONS	SECTION	RECOMMENDATION NUMBER	PAGE
Distribute the existing collective bargaining manual to all school authorities.	III—Manpower	14	36
****Create a division of School Construction and Facilities.**	III—Facilities	1	38
Establish standard criteria and records for evaluation of space utilization.	IV—Facilities Planning and Acquisition System	2	49
Provide school districts with experience records of school architects.	IV—Facilities Planning and Acquisition System	8	54
Develop procedure manuals for educational specifications, building design and construction, site selection, site development, and financial assistance.	IV—Facilities Planning and Acquisition System	10	54
****Immediately implement the provision for state financial aid to rehabilitate and modernize older schools.**	IV—Facilities Planning and Acquisition System	11	54
Upgrade minimum school building lighting standards to conform with the latest Illuminating Engineering Society recommended levels.	IV—Facilities Planning and Acquisition System	13	55
Require the Division of School Construction and Facilities to act as consultants to school districts on building construction to reduce operating and maintenance costs.	IV—Facilities Operation and Maintenance System	7	59
Develop bidding forms and procedures for use by school districts.	IV—Transportation System	3	64
Develop computer-assisted routing and scheduling techniques for use by the school districts.	IV—Transportation System	4	66
****Encourage the establishment of area transportation districts in Massachusetts.**	IV—Transportation System	12	68
Develop and implement a uniform purchasing system for use by school districts.	IV—Procurement System	1	71
Establish a state-wide continuing purchasing committee.	IV—Procurement System	5	74
Create a Division of Nutrition Education and School Food Services.	IV—School Food Service System	1	77
Adopt criteria for measuring efficiency of individual school and district food service operations.	IV—School Food Service System	2	77
Channel available government-donated commodities to food processors for conversion into finished products for resale to various school district systems.	IV—School Food Service System	4	78

***Top priority*

RECOMMENDATIONS	SECTION	RECOMMENDATION NUMBER	PAGE
Redesign the Report and Claim for Reimbursement form by substituting a monthly balance sheet and profit-and-loss statement.	IV—School Food Service System	5	80
Publish a cafeteria personnel handbook at the state level to emphasize selection, motivation, and training of cafeteria employees.	IV—School Food Service System	6	80
Create a position of Supervisor of Insurance.	IV—Interfacing Systems	1	85
Promote the concept and establishment of regional instructional media centers.	IV—Interfacing Systems	14	91
Establish a program to provide a system of mutual support among all libraries.	IV—Interfacing Systems	15	91
School Committee Action			
****Increase solicitation of volunteers through civic organizations and local citizens to aid local school administrators.**	III—Manpower	11	34
****Solicit volunteers from local business and industry to assist in special instructional areas and administrative matters.**	III—Manpower	12	35
****Secure the services of a professional negotiator to represent the school committee in collective bargaining sessions.**	III—Manpower	15	36
Adopt a policy that the superintendent act only in an advisory capacity in collective bargaining.	III—Manpower	16	36
Approve the school budget as one total.	IV—Fiscal System	2	46
Require all school superintendents to make a report at the end of each school year showing the financial results by program compared with budget and also the educational results compared with those forecast when the budget was prepared.	IV—Fiscal System	4	46
Establish security procedures for handling, counting, and depositing cash.	IV—Fiscal System	6	47
****Increase use of proper long-range planning techniques.**	IV—Facilities Planning and Acquisition System	1	49
Reactivate custodial training programs conducted by the Division of Occupational Education at regional vocational high schools and other locations.	IV—Facilities Operation and Maintenance System	1	57
Procure a handbook for all custodial personnel.	IV—Facilities Operation and Maintenance System	3	58

***Top priority*

RECOMMENDATIONS	SECTION	RECOMMENDATION NUMBER	PAGE
****Develop cooperative maintenance arrangements between cities and towns.**	IV—Facilities Operation and Maintenance System	14	62
****Establish cooperative arrangements where transportation is required for special purposes such as vocational and/or technical schools, and the like.**	IV—Transportation System	2	64
Include a provision in all contracts giving the school department authority to set the conditions of bus and driver behavior.	IV—Transportation System	6	66
Require performance bonds as an integral part of every request for Bid and Transportation Contract.	IV—Transportation System	11	67
****Develop cooperative purchasing on a regional basis with assistance from the Department of Education.**	IV—Procurement System	3	72
Organize regional committees to select and maintain lists of recommended textbooks for each subject level and establish procedures for their procurement.	IV—Procurement System	6	75
****Require the use of central kitchens to serve more than one school.**	IV—School Food Service System	3	78
Coordinate the purchase and processing of materials on a regional basis.	IV—Interfacing Systems	13	91
Establish written policies governing travel and reimbursement regulations for school district personnel based on guidelines to be developed by the Massachusetts Department of Education.	IV—Interfacing Systems	18	94
School Administration Action			
****Prepare, beginning in 1971, and annually submit a five-year plan to the school committee for action and forward a copy to the Department of Education for review.**	II—Long-Range Planning	1	18
Make special purpose areas available for other activities.	IV—Facilities Planning and Acquisition System	3	49
Improve on-the-job training for new custodians.	IV—Facilities Operation and Maintenance System	2	58
Improve the quality of custodial supervision.	IV—Facilities Operation and Maintenance System	4	58
Institute schedules for custodians using work-measurement techniques.	IV—Facilities Operation and Maintenance System	5	59

***Top priority*

RECOMMENDATIONS	SECTION	RECOMMENDATION NUMBER	PAGE
Install a suggestion system for custodians and maintenance personnel.	IV—Facilities Operation and Maintenance System	6	59
Involve the pupils in the care of their school building.	IV—Facilities Operation and Maintenance System	9	60
Limit assignment of maintenance planning and administration responsibilities to properly qualified employees.	IV—Facilities Operation and Maintenance System	11	61
Develop and implement maintenance management systems which include sound principles of preventive maintenance.	IV—Facilities Operation and Maintenance System	12	62
Analyze the school's contracted services to determine if employment of full-time craftsmen is justified.	IV—Facilities Operation and Maintenance System	13	62
Encourage custodians to perform minor maintenance jobs.	IV—Facilities Operation and Maintenance System	15	62
Establish centralized student pickup locations unless safety considerations dictate otherwise.	IV—Transportation System	5	66
Designate a telephone number and a person to whom parents can call to obtain bus information or register complaints.	IV—Transportation System	7	66
Issue written rules of conduct to pupils and parents every year and post the regulations in each bus.	IV—Transportation System	8	66
Require written reports of rule violations from bus drivers and establish formal review procedures.	IV—Transportation System	9	66
Assign responsibility for transporting handicapped students to the agency responsible for their education.	IV—Transportation System	14	69
****Expand school district purchasing under state contracts with assistance from the Department of Education.**	IV—Procurement System	4	73
Use paperback books where practical and economical.	IV—Procurement System	7	76
****Develop and implement Local Educational Management Information Systems (LEMIS).**	IV—Management Information System—Local	1	81
Designate guidance personnel as supervisors of attendance and, where possible, shift disciplinary aspects of the position to local police departments.	IV—Interfacing Systems	9	88

***Top priority*

RECOMMENDATIONS	SECTION	RECOMMENDATION NUMBER	PAGE
Use nonprofessional adults on a part-time, full-time, or volunteer basis to perform clerical and other nonprofessional work tasks which consume much time of school nurses.	IV—Interfacing Systems	11	89
Improve the availability of library materials and facilities.	IV—Interfacing Systems	16	92
Install property control systems within each school district.	IV—Interfacing Systems	17	92
City and Town Action			
Designate a member of the school committee and the superintendent or his appointee as voting members of the School Building Committee.	III—Manpower	6	32
****Promote the development and use of the modular systems approach to reduce construction costs.**	III—Facilities	4	40
****Establish local stabilization funds for new school construction to reduce financing costs.**	III—Facilities	5	40
****Make early decisions and commitments to new buildings.**	III—Facilities	6	41
Require the architect selected for a new school building to evaluate proposed new school building design technologies and methods.	IV—Facilities Planning and Acquisition System	6	52
Require the architect selected for a new school building to study alternate types of heating and ventilation systems prior to completion of the final design, and specify high-quality, easily maintained mechanical and electrical equipment.	IV—Facilities Planning and Acquisition System	7	53
Involve maintenance and custodial personnel in the design and planning of new facilities.	IV—Facilities Operation and Maintenance	8	59
Make the local health agencies responsible for health services in all public schools.	IV—Interfacing Systems	12	89

***Top priority*

Section II

Critical Needs

The school system of the Commonwealth, viewed as a whole, suffers from several basic shortcomings, which together make the introduction of effective and economical business practices unnecessarily difficult. These shortcomings can be roughly grouped in three categories:

- ► Lack of long-range planning.
- ► Problems of district size.
- ► Absence of adequate and timely information on which management decisions can be based.

This section of the report deals with these critical needs and makes specific recommendations designed to correct them. These recommendations and many of those in other sections cannot be fully implemented without strong leadership from a well-staffed and well-funded Department of Education. The subjects of adequate financial support and effective utilization of skilled personnel are critical, and are addressed within the Funding and Manpower sections of Resources for Public School Education.

Long-Range Planning

In business, there is a continuing high-level planning program. This effort results in the preparation and submission to top management annually of an operating plan which looks ahead one year as well as a long-range plan for, at least, three to five years. In the public school system there is a planning effort in each district and within the Department of Education to prepare and submit an annual budget to the school committee and the Board of Education, respectively.

To the business executive, the operating plan is a key document because it projects sales, profits, and return on investment. These are the yardsticks by which the board of directors and the stockholders measure success. The plan also identifies the resources required to implement the program and emphasizes the areas which are critical to success.

Within the public school system, the annual budget serves a similar purpose. However, it does not contain the type of information needed by school committees, the Board of Education, and taxpayers to measure management success because yardsticks comparable to profit and return on investment are not established. The technique of budgeting by objective is an attempt to fill this void.

In business, several kinds of plans are implemented at various levels within the organization. Examples are program, project, financial, and facilities plans. Such plans are the result of decisions made by top management. Subsequent decisions may require the amendment of plans.

Long-range planning is a continuing activity. Key executives are charged with responsibility of informing top management immediately of any actual or anticipated developments which will affect the future.

Once a year, key executives prepare and submit a formal long-range plan, usually covering a five year period to management. This is a fundamental and necessary document because it forecasts business prospects based on occurrence of the most probable set of impacting developments. Further, it includes contingency plans which recommend action to be taken should a significantly more favorable set of developments occur, and the

action to be taken should the least favorable set of impacting developments occur. The areas in which risk capital could be invested profitably are also pinpointed. In addition, it recommends what existing programs, projects, or business lines should be expanded, curtailed, or discontinued as well as incorporating the financial, manpower, and facilities plans to support the forecast.

The long-range plan is an authoritative forecast. Inevitably, it begins to lose its validity almost as soon as it is published because operating conditions change. Nevertheless, the long-range plan is invaluable in helping the top executive determine direction and make the right implementing decision that is so necessary to successful leadership.

There is very little formal long-range planning at either the local or state level. Therefore, the Business Task Force feels strongly that long-range planning is essential in public education. Executives within the public school system are making critical decisions without the information and guidance afforded by a workable long-range planning function.

RECOMMENDATIONS

1. **School administrations should, beginning in 1971, prepare and annually submit a five-year plan to the school committee for action and forward a copy to the Department of Education for review.**

Participation in long-range planning should be organization-wide. Personnel should ask and answer questions such as: What developments might affect the future of public education, particularly in my area? What is the probability of their happening, and when? What action should be taken, and when? What are alternatives? What would be the effect of taking no action?

Results of this continuing process must be submitted to key executives for evaluation, then to the superintendent for decision. Those executive officers then assign the overall responsibility for the long-range planning effort to key members within the organization. They would, in turn, identify actual and anticipated developments which might affect the future of public school education. Examples are:

- Impact of legislation on the design and cost of facilities.
- Effect of changes in government policy on providing educational funds for special purpose programs.
- Reaction of parents and pupils to effectiveness of the public school system.
- Influence of television in general, and educational television in particular, on the attitude of children including those of preschool age toward formal education.
- Use of contract teaching services for selected subjects.
- Stand of the taxpayer on funding.
- Result of experimental teaching programs for preschool children.
- Improvement in audio-visual techniques and devices.
- Availability of professional personnel, particularly in the business management area.
- Intention of the unions active within the public school system, with respect to salaries, fringe benefits, working conditions, and associated possibility of strikes.

Additionally, these school executives would establish procedures governing the participation of personnel at all levels of the organization and explain the long-range planning effort to them.

Having put the long-range planning effort into effect, continuing responsibilities of the key personnel would be to:

- Inform the superintendent immediately of actual and anticipated developments which will affect the future of public school education.
- Prepare and submit annually to the superintendent a formal long-range plan covering a five year period.

The long-range plan includes for each project or program:

- A statement of objectives and their needs.
- An analysis of developments which might affect the program.
- A forecast based on the progress expected over the next five years.
- An alternative course of action.
- A financial plan, a manpower plan, as well as a facilities plan.

A small school district may find it frustrating to plan five years ahead because of difficulty in securing financial resources to implement the best of plans. In that case, the district should consider getting together with other small districts and prepare a cooperative five-year long-range plan. See section on School District Cooperation.

In large school districts, it may be advisable to have a key manager act as coordinator during preparation of the long-range plan.

2. **The Department of Education should begin in 1971 to prepare and annually submit a five-year plan to the Board of Education.**

The Commissioner of Education should assign the overall responsibility for organizing and carrying out the long-range planning effort to key executives within his organization. They should follow the procedure outlined for the local district executives under the preceding recommendation. To be successful, the planning effort must be effectively coordinated. Therefore, we suggest that the proposed Office of Long-Range Planning be changed to the Office of Long-Range Planning Coordination. This office should:

- ► Coordinate the long-range planning effort within the Department of Education including preparation of the five-year plan.
- ► Review the five-year plans submitted by the local districts with particular emphasis on those items which should be considered for inclusion in the department's plan.
- ► Advise and assist the local districts in the preparation of their five-year plans, when so requested.
- ► Develop, in conjunction with district representatives, a general format to provide uniformity as to subject matter and the order in which it is to be presented in the plan. This should be initiated after the first submission and introduced in 1972.

School District Cooperation

As businessmen, we are aware of the problems small businesses encounter in competition with larger businesses. Although size is only one factor in a successful operation, visits to school systems in Massachusetts, comparisons with developments in other states, and study of literature, indicate that a great many of the state's school systems are not of a size capable of producing the most effective education value for the dollars expended. There are many studies which show a positive relationship between size on the one hand, and cost, efficiency, quality, and economy, on the other. Evidence that progress can and should be made to reduce the number of school districts along these lines is contained in the figures shown in table to the right. The total nation-wide number of school districts decreased by 79% between 1932 and 1966. On the other hand, the number of school districts in Massachusetts during this same period grew from 365 to 392.

Present Commonwealth policy appears to be pointed to increased cooperation, but actual performance has been tentative and progress is slow. Cooperation between school systems on a scale larger than has yet been envisioned is essential. This cooperation may take many forms. Among them are the following, all of which have been put into practice in some degree or combination:

- ► Mandatory consolidation of districts by the General Court and the Department of Education.
- ► Expansion of the existing system of financial inducements for districts to consolidate.
- ► Establishment of separate school districts to provide those services which require specialized facilities such as vocational-technical education.
- ► Encouragement of contiguous groups of communities to set up cooperative facilities for services which they cannot afford individually.

These approaches can be used selectively, in combination, or in sequence. Whatever method is selected, it appears necessary that the Department of Education should take a leading role to

STATISTICS ON SCHOOL DISTRICT REORGANIZATION

States	Number of School Districts			Decrease in School Districts			
				1932-1961		1932-1966	
	1932	1961	1966	No.	%	No.	%
California	3,589	1,650	1,357	1,939	54	2,232	62
Colorado	2,041	341	184	1,700	83	1,857	91
Illinois	12,070	1,552	1,354	10,518	87	10,716	88
Indiana	1,292	888	442	404	31	850	66
Iowa	4,870	1,391	984	3,479	71	3,886	79
Kentucky	384	207	200	177	46	184	48
Michigan	6,985	1,981	150	5,004	72	5,835	83
Minnesota	7,773	2,420	1,439	5,353	69	6,334	81
Mississippi	5,560	150	149	5,410	97	5,411	97
Missouri	8,764	1,735	1,028	7,029	80	7,736	89
Nebraska	7,344	3,348	2,546	3,996	54	4,798	65
Nevada	266	17	17	249	94	249	94
New York	9,467	1,280	997	8,187	87	8,470	89
North Dakota	2,228	1,066	603	1,162	52	1,625	73
Ohio	2,043	840	738	1,203	59	1,305	64
Oregon	1,995	475	409	1,520	76	1,586	79
Pennsylvania	2,587	956	863	1,631	63	1,724	66
South Carolina	1,792	109	108	1,683	94	1,684	94
West Virginia	450	55	55	395	88	395	88
Wisconsin	7,662	1,967	572	5,695	74	7,090	92
TOTAL	89,162	22,428	15,195	66,635	75	73,967	83
TOTAL ALL STATES	127,649	36,402	26,983	91,247	72	100,666	79

provide a unified policy and adequate communication between systems. Fragmented education results in duplication of overhead, lack of program coordination, competition for the tax dollar without planned priorities, and competition for personnel, in which the better-financed entities tend to prevail.

Supporters of local control should be concerned about a system which so fragments the functions of communities that they have, in fact, very little control over their destiny. Some cities and towns have even been forced to hand over control of important parts of their programs to bodies with which they, as communities, feel very little affinity. Therefore, local control, especially if it is considered as limiting the necessary and sometimes overforceful activities of state and federal authority, can be more effective and economically operated if the local units can call upon a larger and more diverse group of citizens to represent their interests.

The growing complexity of the educational process makes today's situation increasingly critical. The concept of cooperation in education is one which has not, in the past, appealed to a large segment of the Commonwealth's citizens. However, aside from purely educational advantages, we are convinced that a system which combines central leadership with strong centers of local control will best produce economies of operation. It will also minimize the wasteful and often dilatory processes of bureaucracy.

Cooperation between school districts produces the following specific advantages:

- ► Greater challenges, higher scholastic achievement, and more efficient use of teaching staffs.
- ► Construction of facilities at lowest cost to meet needs of the community.
- ► Use of funds for educational purposes rather than excessive administration costs.
- ► More capable business management and the resulting economies. Specific examples of this will be found elsewhere in this report, particularly in the sections dealing with transportation, purchasing, libraries, textbooks, and management information system.
- ► Special programs for all children in need of them at the lowest cost.
- ► School groupings which are financially self-sufficient and whose voters can truly be in control of all aspects of their childrens' education.
- ► Orderly planning of future developments of the system based on financial projections.
- ► Establishment of a state aid equalization system which can be easily administered and still make possible equitable results.
- ► Ability to employ consultants and experts and improve general managerial effectiveness.
- ► Capability of systems to appraise and employ new educational technology, including machine teaching and other purchased services which promise to free the classroom teacher for the more important problems caused by the rapidly expanding body of available knowledge. This is an area where substantial savings will be made in the near future.

For more than 20 years, the expressed policy of the Commonwealth has been to "promote the . . . establishment of consolidated regional schools." (Chapter 645 General Laws 1948). In 1948, a procedure was inaugurated (Chapter 71 General Laws as amended, Sections 14 to 161) through which regional schools would be created and operated. During this period, over 120 communities have combined into 50 regional school districts, not counting the establishment of 19 regional vocational-technical school districts. The majority of these districts have not regionalized at the elementary level and the main thrust of the effort has been to eliminate all school systems with a total school population of less than 2,000. The next immediate objective of the Massachusetts Department of Education is to increase the scope of the existing regions to include the range of kindergarten through grade 12.

The time has come when Massachusetts should not and need not be satisfied with such limited objectives. In recognition of this situation, the Board of Education has instructed the Department of Education to prepare legislation making mandatory the regionalization of smaller districts. This courageous attack on the basic problem is welcomed. However, the Task Force strongly questions the desirability of mandatory legislation at this time because:

- ► Public opinion needs a period of informed and in-depth discussion if such a program is to receive the popular support essential for its success. Some deep-seated traditional attitudes must be changed. This will require public meetings, identification of power sources within the community, involvement of citizens and legislators, gathering of relevant statistics and information, and a positive attitude that what is educationally and economically useful can take place.

- Norms that have hitherto been accepted by the Department of Education for district size need careful reexamination. It is doubtful whether a district with a pupil population of 2,000 is today adequate to support an effective and economical program.
- Possible forms of cooperation or regionalization plans have not received sufficient consideration from all concerned parties. It is vitally important that this subject be carefully studied in the light of present conditions and the solution be more than a patchwork superimposed upon existing laws and regulations. Changes that will ultimately be regarded as necessary may be so sweeping that a period of experimentation is desirable if the optimum program is to be accepted and adopted.

The Task Force envisions a gradual but steady transition in the direction of larger school districts. This process needs the complete commitment of the General Court, the Board of Education, school committees, teachers, and the general public. It should be a process by which all persons experiment and learn together with the common objective of devising the most effective and economical educational system. Such a process, which appeals to the traditional independence and good sense of the citizens of Massachusetts, is the one which has the greatest possibility of success.

In considering school district cooperation, the following guidelines were adopted:

- Education is a function and responsibility of the Commonwealth, which it may delegate in whole or in part to other groups.
- Massachusetts is committed to providing an equal opportunity for a quality public education to all its children, in accordance with their abilities. This opportunity should depend on the individual's desire to learn rather than accidents of geography or local wealth.
- Policy-making and direction of public education beyond the authority of the local school systems should be concentrated in the Department of Education.
- A local school district should be the basic organizational unit as it has traditionally been. Cooperation by local school systems will serve to strengthen, rather than weaken, local control.
- Local cooperation must depend on factors such as density of population, length of travel time, local wealth, character of the communities involved, and the like. No absolute figure for the size of such groupings can be determined.
- Participation by a community in a proposed cooperative effort should take place with the full understanding and consent of voters in the planned district or entity.
- Cooperation must be guided by some form of logical planning, even though plans may be changed from time to time. If this is not done, there is substantial risk (as experience in other states has proved) that certain communities would be in a situation where all their neighbors had been preempted.
- There should be an equalization of the tax burden in such a way that poorer districts are able to provide an adequate education for their children, but also in a way that does not prevent any district from providing whatever level of educational services it desires and can afford.

RECOMMENDATION

1. **The Department of Education should establish an office, designated as the Office of School District Cooperation, reporting directly to the Commissioner, with exclusive responsibility to promote and coordinate school district cooperation.**

This function is too important to be treated as a secondary responsibility of the School Building Assistance Bureau. It should be headed by an official who would report to the Commissioner. Further, the personnel of the Massachusetts Department of Education should be strengthened so that it is in a position to pursue this aim vigorously in accordance with the General Court's expressed policy. The first duty of the office would be to prepare a Master Plan outlining proposed groupings of school systems for purposes of cooperation.

The aim of such a plan is to identify groupings of school systems which, in terms of size and other criteria, could best meet the educational objectives of the Commonwealth. It should also provide for ultimate inclusion of vocational-technical education and other forms of special education as a function of a total comprehensive system in each grouping of districts, even though several of such groupings are to combine their resources to provide these facilities. By implication, this involves consideration of breaking into smaller districts those few cities whose school administration may have become unwieldy and unresponsive to local influences. It is not intended to be a basis for compulsion and would need to be flexible in response to changing conditions.

Nevertheless, it is not realistic to expect the General Court, the Department of Education, or

the public to give support to vague and unplanned activities. Whether the ultimate policy involves compulsion, persuasion, or a combination of the two, an objective is a practical necessity. Any plan that is adopted must be long-range and have a sufficient degree of commitment from the General Court to assure that such planning can take place with confidence. Much money has been wasted in the Commonwealth through partial implementation of plans.

The process of cooperation should proceed from the informal to the more formal stage with stress on informality in all cases where it can be made to work. A maximum of local participation and a minimum of bureaucracy, will be effective and more in conformity with the attitudes and traditions of Massachusetts' citizens.

The first step in the direction of cooperation should be encouragement of contiguous groups of communities, within the framework of the Master Plan, to set up cooperative nonprofit facilities to provide services that are out of the reach of the typical smaller systems. These include cooperative purchasing, first-class business management, computer programming and servicing, information systems design, evaluation of performance contract services, supportive services to guidance and counseling staffs, innovative programs, summer activities, development of special programs to qualify for state aid, and advice on program budgeting. Initial steps in this direction can and should be taken by local school administrations on their own initiative at the earliest possible time.

Funds for these facilities would be provided on a continuing bases by a modest per pupil membership fee from the communities involved, through a direct grant from the state, and from specific payments by communities for actual services requested and supplied. Additional funds could be available, from time to time from federal programs such as Title III and private foundations where innovative programs are involved. Programs of this nature are successfully operating in various parts of the country. They have merit since they do not violate the principle of local control and bring services and sources of funds not previously available to the communities involved.

Certain highly successful cooperative ventures of this type already exist in Massachusetts (for example, Merrimack Educational Center and SPOKE). These organizations were brought into existence through the use of federal funds. In spite of the success of the ventures and the high regard in which they are held, it is doubtful whether the communities involved can afford to continue them without monetary aid. Therefore, it is important that the Commonwealth provide the limited funds necessary for their continuation, pending adoption of broader programs.

The next step can be expected to develop naturally as the advantages of this cooperation emerge. Those groupings which have become accustomed to working together, either by themselves or in combination with others, would take over the operation of vocational-technical and other special schools. In addition, they could coordinate the activities of such special schools with the regular facilities of the school districts into comprehensive educational systems. Such schools could be financed in a manner similar to the cooperative ventures described above by a basic per-pupil contribution from each grouped district involved, by state aid including, in this case, building funds, by federal funds, and by payments from each district for services rendered.

These activities would need more formal arrangements for voter control and election of officials. Here again, the customer-supplier relationship maximizes the possibility of effective local control. The General Court and the Massachusetts Department of Education have tended, not unnaturally, to deal first with those situations having a high visibility and offering the greatest immediate possibility for federal contributions. These areas include vocational-technical schools and institutions for various types of special students. This approach tends to short change the normal educational process which involves by far the greater number of students. It has served to limit the ability of local communities to build, either alone or in combination, a comprehensive system.

It is understood that such pressures for action have brought about establishment of independent special schools and, in particular, vocational-educational schools, but we question whether this financially wasteful structure should be retained within the framework of a state-wide, forward-looking plan for education.

The final step, which we hope could take place within 10 years, would involve the formal organization of school districts of a size considerably larger than has been the general rule in Massachusetts. The public, as a result of experience in less formal groupings, should by this time be ready to accept the proposition that such action would provide further economies and more significant local control.

It is clearly in the interest of our citizens, of the Board of Education, and of the members of the General Court that this step be taken by common consent and with full understanding of the facts that make it desirable both educationally and

fiscally. This result can be obtained if a program along the lines described above is skillfully guided and promoted and receives the strong backing of all parties concerned. However, the Commonwealth cannot afford protracted delays in the implementation of this program. Therefore, we recommend that a maximum period of 10 years be set for the fulfillment of the Master Plan by voluntary means. At the end of this period, the Department of Education with the assistance of MACE or possibly of a commission to be set up specifically for the purpose, should be empowered to complete the process of district organization in accordance with the Master Plan. Until this has been accomplished, many of the recommendations made by this Task Force can only be implemented to a limited extent.

Finally, we consider it to be of vital importance that in every situation involving cooperative action, all elected officials should be voted upon at large by all voters in the grouped district. Further, it should not be required that appointed officials be selected on the basis of individual community representation. We are convinced that a system by which voters combine on the basis of like educational, social, or economic views will better serve the public than one which is geared to lines on a map which have little relevance to existing conditions.

Management Information System—State

A management information system must involve the coordinated efforts of the Office of Planning and Program Coordination, the Department of Education, as well as users and contributors of educational information.

It is imperative that the Department of Education be able to describe the current and future needs of the users of educational information. Additionally, it should have a plan for an information system to tie in with the larger state system and begin implementation where it is feasible.

The technique of developing management information systems implies a study of the needs for management information, the design of a data base, as well as written computer programs. Often, the results of such developments have been unsatisfactory. Frequently, the development staff missed scheduled dates, more equipment was needed for the applications, and total costs exceeded estimates. When action was taken to resolve those problems, they discovered the original system design concept was inadequate to meet information requirements of the operation.

The Division of Research and Development has been developing a statistical educational data bank for the Commonwealth. The intent of this data bank was to supply information as required to the Board of Education as well as the school districts. This bank also promised to be the cornerstone for future development of information systems. In general, it contains information pertaining to pupil enrollment, finance, personnel, and curricula pertaining to public education. Typical reports supplied by the bank include:

- Data necessary to administer approximately $330-million of state and federal aid to public education.
- Annual report of the Department of Education containing enrollment statistics and financial data for all school districts in the Commonwealth.
- Salary schedules of superintendents and principals.
- Age at entrance and number of sessions in Massachusetts' school systems.
- Three-year salary trend data of the Commonwealth's professional staff.
- Teacher mobility analysis.
- Distribution of graduating class.

There seems to be some confusion about the purpose and function of this operation. Although hampered by inadequate staff and funds, it has the capability to accumulate and store data. Historical information is available which can be used for statistical and comparative purposes.

Local districts have not been involved in the design of the input or the type of output reports to be supplied. As a result, reports are being distributed which are not used. Most districts feel they do not get output which is timely enough or in proper form to be used for planning and the decision-making process. Moreover, the accuracy of information supplied by the districts is questionable, possibly because they view a large part of the information as irrelevant. Therefore, they are not too concerned about its accuracy.

If accurate input from the districts, as suggested in the section on Budgeting is not made available, it will be impossible to develop a management information system which is meaningful to planning within the local systems.

The cost to develop and establish a management information system in the Department of Education would be approximately $1.3-million over a three-year period. Thereafter, the annual operating cost would be about $500,000. The system would provide all local districts with needed information without development costs on their part. The possibility that the system still may be inadequate even after this amount has been expended has led to a detailed recommendation designed to assure the needed information.

RECOMMENDATIONS

1. **The Department of Education, with appropriate funding from the General Court, should establish a Massachusetts Educational Management Information System (MEMIS).**

Selection of a man as Director, Massachusetts Educational Management Information System is the first step. He must have a working knowledge of the operations of the Department of Education as well as be professionally qualified in information systems and data processing. His level must grant him authority to structure the organization and select key personnel to develop and implement the system.

The first effort of the director and his staff would be to reestablish confidence in the annual report of the Department of Education. This was the initial attempt at establishing state-wide information systems. That report requires massive data be gathered on an annual basis from the local districts. This promised to provide a base for future development of information systems. However, it now consists largely of untimely and historical data. Therefore, the director must concentrate on improving the annual report to simplify the input so as to process the data promptly and deliver clear and flexible results.

The second step would be to develop preliminary specifications for MEMIS. In formulating these specifications, the director must establish a relationship with users and identify expertise in the Department of Education as well as local and regional school districts. During development, coordination with the Modernization Systems unit within the Department of Administration and Finance must also be maintained. Specifications must recognize present and future needs such as increased financial accountability in school management and long-range planning. The system must continue current applications in pupil accounting, personnel, and finance. All existing systems should be reviewed to ensure compatibility with MEMIS specifications.

Revamping of the annual report and the preliminary systems design should be completed within one year. These specifications must include:

- Scope and objectives.
- Information sources.
- Report descriptions listing all data elements involved, level of management use, and frequency of distribution.
- Forecasts in specific areas with suggested techniques for analyzing data, determining trends, possible problems, and alternative solutions.
- Communication requirements with federal, state, regional, and local systems.
- Suggested methods to simulate and determine the best solution in school bus schedules, classroom scheduling, school construction, building finance, operating budgets, supply order quantities, and the like.
- Proposed hardware configuration.
- Personnel requirements.
- Implementation schedule.
- Costs and savings.

To assure broad acceptance, the preliminary specification must be distributed widely. Comments should be solicited and suggestions incorporated where necessary. Upon approval and acceptance of the preliminary specifications, the next phase is implementation. The size of the system, available resources, and the impact on users will dictate the logical steps in this procedure.

Plans must include completion dates, specific personnel assignments, and scheduled progress-status reviews by the director and a committee of Department of Education executives. These reviews must include results, user reactions, and costs. Effectiveness of MEMIS can be assured in this manner. In addition, adherence to documentation standards, scheduled user training programs, as well as continued updating and expansion of the systems will further assure that it achieves its objectives at all levels.

The MEMIS staff must be the only systems group within the Department of Education and must have access to the department's computer. The organizational location of the personnel in charge of computer operations is not critical, but the geographic proximity, and the relationship between the MEMIS staff and this group, is critical.

Much of the important output of MEMIS will be on an ad hoc basis. Requests for these one-time reports will come from legislators, local districts, and others. To satisfy these requests in a timely manner, the staff must be responsible for establishing processing priorities within the group operating the computer. The operating group will also have the responsibility of distributing the output reports in accordance with instructions from the MEMIS staff.

2. **The Department of Education should establish an advisory committee on information systems for education.**

The purpose of this committee is to make certain the capabilities of MEMIS are made fully available to its constituents. This involves a combination of technical expertise and educational knowledge which would rarely be encountered in one individual. It would also help ensure acceptable priorities are established and communication is maintained between all parties involved in MEMIS. The committee should be selected by the commissioner and include representatives from the associate and assistant commissioners, the Superintendents Association, the Business Managers Association, recognized information system authorities who are not in the Department of Education, as well as the MEMIS coordinator.

Activities of the staff attached to the committee must include periodic surveys and reviews of MEMIS and provide suggestions for its maintenance and development. The advisory committee would be responsible to the commissioner and advise him of the success of MEMIS. It must also work in an advisory capacity in the development and approval of the MEMIS budget.

Section III

Resources for Public School Education

The success of any business undertaking is dependent upon identification and management of the resources required to conduct it. This principle is applicable to education as well as any commercial enterprise. There are three basic resources—funding, manpower, and facilities. Within each of these broad classifications are many subdivisions. Therefore, the discussion in this section will be limited to salient items that are most critical to the viability of the public school system.

Funding

One of the primary resources in the successful operation of the state's public school system is money. However, many problems plague the taxpayers of Massachusetts. The outstanding one is the tremendous imbalance existing between support to education provided by local property taxes and the more broadly-based state support. This inequality, combined with rising costs, has reached the point where voter reaction in many areas is beginning to restrict unduly those resources available to local school districts. Without a minimum level of funding, these systems cannot operate effectively from either a business or an educational viewpoint. Concurrently, the formula for distribution of state aid, which is intended to provide each school district with essentially equivalent operating resources by equalizing local tax burdens, has proven ineffective.

EVALUATION

The funding situation noted requires prompt correction if the cause of education is to be served. The subject of state aid to education is complex, and involves many aspects not within the purview of this Task Force. These include the matter of local educational control, tax sources for additional state funds, and how much money is required to educate a child. From a business standpoint, however, it is apparent that many school districts are operating inefficiently because of inadequate funding.

RECOMMENDATION

1. **The General Court should consider the findings and recommendations of the various individuals and groups that have studied the school funding problem, and take appropriate action.**

The taxpayer finds himself beset by several conflicting pressures. On the one hand, he recognizes the desirability and need of providing a good education for children. This makes good economic sense. The Bureau of the Census statistics show that the difference in income between a high school graduate and a student who drops out after finishing the eighth grade is about $2,000 per year. The present dropout rate in Massachusetts at the end of eighth grade is 15%. If this were reduced to 5%, the added annual taxable personal income would amount to $200-million.

On the other hand, the taxpayer sees school costs, as well as other expenditures, rising inexorably year after year. Many factors influence this rise. Inflation accounts for no small part of it. The growth in student population has brought with it a commensurate growth in expenditures. Other cost increases are brought about by public de-

mand for additional services for handicapped children, extra school bus transportation, community use of schools, and the like. An additional impact, just now beginning to be felt, results from the closing of an increasing number of parochial schools.

From the year ending June 30, 1967, when the total cost of elementary and secondary education in the Commonwealth was $732-million, or $687 per pupil, the level rose to $949-million in 1968-69, or $828 per pupil. The per-pupil costs have been rising at rates of 5% to 10% each year since 1960.

Taxpayers throughout the Commonwealth have increasingly felt the pressure of these rising costs. Consequently, they have become more vocal and active in expressing their concern.

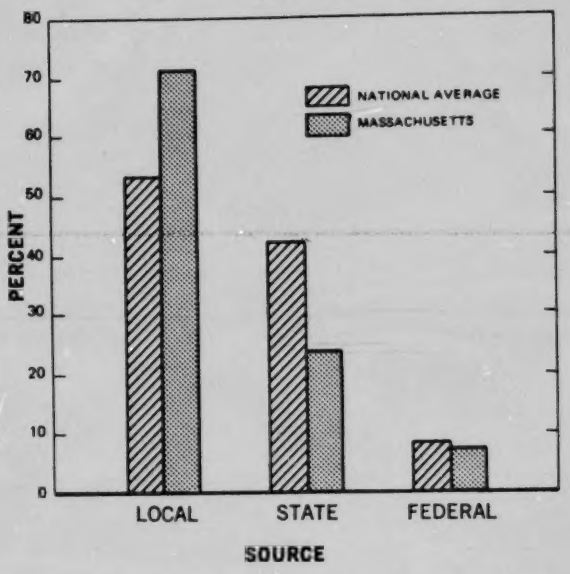
Many court decisions have established the authority of local school committees to set the size of school budgets and to require the communities to appropriate the necessary funds. However, voters, in general, have continued to voice concern and opposition to increases in school budgets. For example, this opposition has been manifested in the election of school committeemen pledged to "axe the budget." In other instances, referenda have prevented or delayed (with correspondingly higher final costs) the construction of essential school buildings. In one case, a town's school system lost its accreditation by the New England Association of Colleges and Secondary Schools because the town, by referendum, defeated a proposal to construct a new high school. Taxpayer associations have been formed in many communities to combat rising tax rates.

That the school budget should bear the brunt of attack by local taxpayer associations or by less organized groups is not surprising. In medium-sized and small towns in the Commonwealth, the school appropriation represents a very large proportion of the total budget. On a state-wide average basis, school expenditures account for 65% of total local spending.

The tradition of local autonomy, so jealously guarded in Massachusetts, carries with it, along with its many real advantages, an equally real price. Due to insistence on a high degree of local autonomy, the burden of school support has fallen upon the local property taxpayer.

In 1968-69, as shown in the graph at the right, 52% of the support for public elementary and secondary schools on a nation-wide basis was funded by local taxation, 40.7% was appropriated by the state, and 7.3% by the federal government. The corresponding figures for Massachusetts were 70.7% local, 22.4% state, and 6.9% federal. Clearly, the taxpayer is looking for a way to shift

SUPPORT OF PUBLIC ELEMENTARY AND SECONDARY SCHOOLS – 1968-69



more of the school support to the state and federal government, without relinquishing control of the local school system.

Compared with support given to education in other states, Massachusetts cannot be proud of its standing. Although one of the richer states, eighth in per capita income and fifth in personal income per school-age child, Massachusetts ranks twenty-fifth in actual expenditures per pupil.

This stands in contrast to the state's comparative rank of tenth in per capita expenditures for police protection, first for fire protection, and fifth for welfare. (Rankings of the States, 1970, prepared by the National Education Association).

The other aspect of funding has to do with the variation of school support within the state. Although annual per-pupil spending is not the sole criterion of educational opportunity or administrative efficiency, the variation in expenditures, from little more than $400 per pupil in some districts to over $1,000 per pupil in others, is a clear indication of disparity.

Obviously, a reform in the state's equalization procedure is desperately needed. A penetrating analysis of this issue is presented by Stephen J. Weiss, "The Need for Change in State Public School Financial Systems," New England Economic Review, Federal Reserve Bank of Boston, January/February 1970. An additional study of the Massachusetts procedure, in more detail, is given in a report to the Massachusetts Advisory Council on Education by Andre Daniere, "Cost-Benefit Analysis of General Purpose State School-

Aid Formulas in Massachusetts," Institute of Human Sciences, Boston College.

The urgency of the funding problem is widely recognized. On March 19, 1970, the Assembly on Massachusetts Government held at Tufts University passed a resolution urging the Legislature to increase the level of state funding to 50% in the next two years. The Master Tax Plan Commission, created by Chapter 162 of the Resolves of 1967, is charged with making an in-depth study of the revenue needs of the Commonwealth and with recommending ways and means of providing the revenues necessary to meet the needs. The work of this commission, which is expected to be reported by the end of 1970, includes state aid to education and the distribution formula. The Commissioner of Education has created an ad hoc Committee on Equal Educational Opportunity to study and recommend changes to the present equalization formula. The Master Tax Plan Commission is represented on the Committee for Equal Educational Opportunity.

The General Court should review carefully the recommendations of these groups and take timely action. Concurrently, the findings should be made the subjects of an intensive educational campaign that will bring all the funding issues before the public. Only an informed citizenry can vote wisely; thus, the facts involved in the problem of educational funding must be presented to the voters. This campaign could be coordinated by the Education Conference Board. However, since the citizens will make their wishes known by voting for elected officials, it behooves individual members of the Legislature to bring the question before their constituents and make their positions known. The information given to the public in the proposed educational campaign would include:

- ► A comparison of educational spending in Massachusetts with the other states.
- ► Information on the variation in spending from district to district in the Commonwealth.
- ► The quantitative effect on local property taxes of increased state assistance.
- ► The optional sources for increased state funding.

Until such time as these actions are effected, the taxpayer should have assurance that the moneys he is now committing to education are being effectively managed. The report deals very specifically with this subject in the section entitled School Business Management System.

Manpower

As in all activities involving imaginative solutions to problems and intricate interpersonal relations, manpower is one of the most important resources available to education in Massachusetts. The first of these is, of course, the personnel of the individual school districts—a subject which is not part of this report. Close behind this in importance should be a Department of Education staffed by well-qualified specialists whose abilities would be available to local school systems. Other important manpower resources can be found in the relationship of school committees to their communities and to their superintendents and in the use of volunteers.

Department of Education

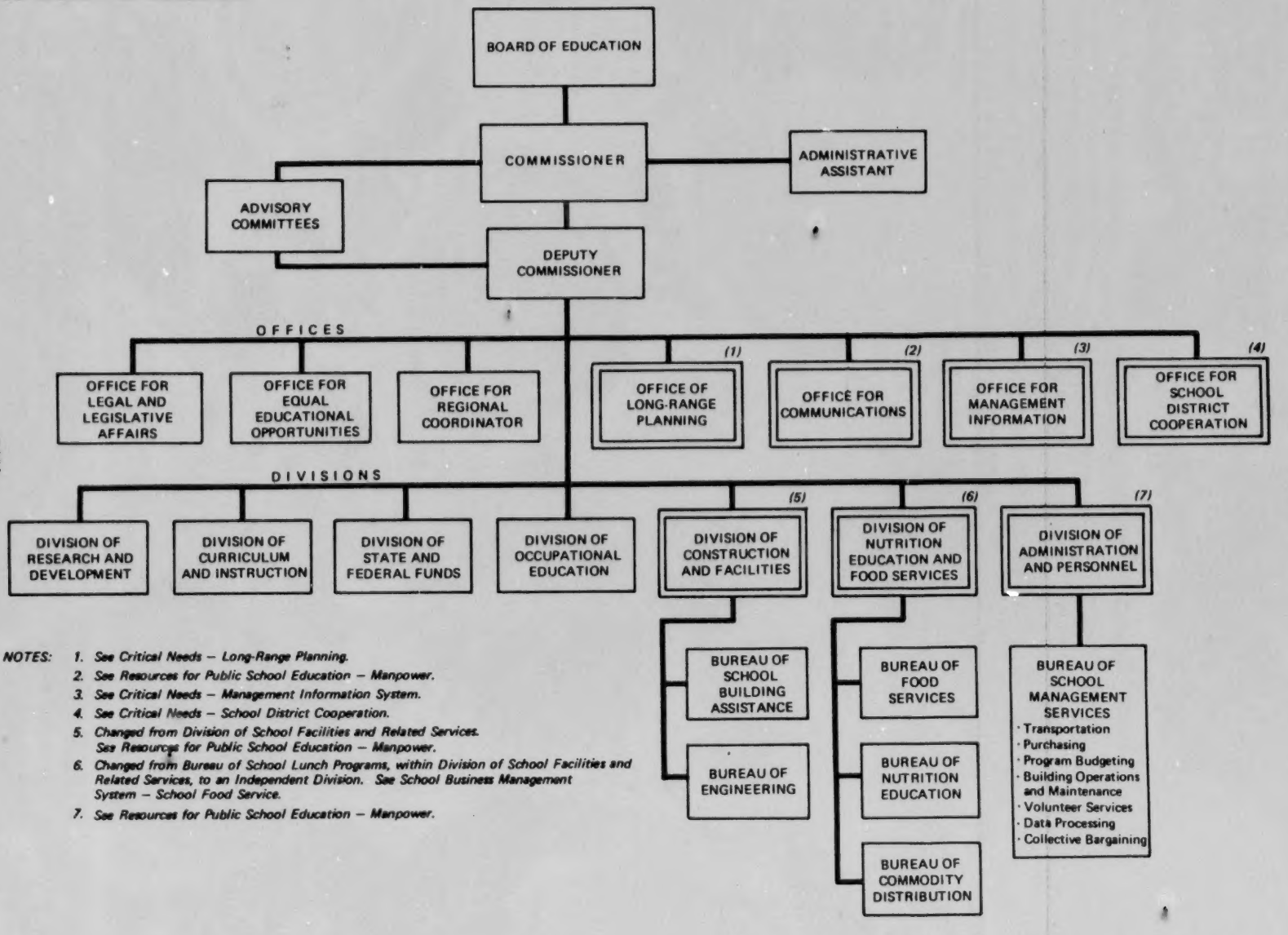
The Board of Education has delegated to this department responsibility to implement policy. It is the agency of the Commonwealth for providing leadership and services to education. Current legislation gives the department ample authority to exercise this function if it is adequately funded and staffed.

EVALUATION

The Department of Education must take a much stronger and more decisive role in public education. Many areas of operation require professional personnel at the state level to bring about the needed strengthening.

The chart on the next page depicts the organization of the Department of Education which would result from full implementation of the recommendations in this report within the framework of the existing organization. However, the Task Force considers this organizational structure to be unwieldy and a hindrance to effective management. It is strongly suggested that the organization be streamlined by dividing, between two deputy commissioners, the functional responsibilities for curriculum and instruction and for administration and business services, respectively. Task Force suggestions for the establishment of agencies are emphasized on the chart by double-line boxes accompanied by appropriate footnotes indicating where specific recommendations are made in this report.

REVISED ORGANIZATION
DEPARTMENT OF EDUCATION



NOTES:

1. *See Critical Needs – Long-Range Planning.*
2. *See Resources for Public School Education – Manpower.*
3. *See Critical Needs – Management Information System.*
4. *See Critical Needs – School District Cooperation.*
5. *Changed from Division of School Facilities and Related Services. See Resources for Public School Education – Manpower.*
6. *Changed from Bureau of School Lunch Programs, within Division of School Facilities and Related Services, to an Independent Division. See School Business Management System – School Food Service.*
7. *See Resources for Public School Education – Manpower.*

The professional personnel necessary to man the new agencies are discussed in detail in this and other sections of the report. The Task Force has also prepared specifications of the qualifications which would be required of these professionals. These specifications, although not part of the report, are available in the Task Force files. We believe that the salaries for this professional staff would, in the initial stages, amount to about $750,000 annually. This figure might rise in the third or fourth year. However, by that time tangible evidence should be available to substantiate the value of the recommendations.

RECOMMENDATIONS

1. **The General Court should pass legislation granting the Department of Education authority to select, compensate, and classify their professional staff within overall limits of its budget.**

The commissioner, as chief executive officer for the Board of Education, must have a qualified staff of diversified, specialized professionals if he expects to be the guiding force in an effective educational system. There is a great desire among the school districts for qualified assistance at the state level. This must be provided by the Department of Education.

In order to attract and retain qualified personnel, the department must compete in the open market. Therefore, standard business practice dictates the need for complete flexibility in the recruitment of staff. A precedent for this approach already exists in legislative provisions covering the employment of professional personnel at the University of Massachusetts.

All of the recommendations of the Task Force requiring a professional staff in the Department of Education are predicated upon implementation of this specific recommendation.

2. **The Department of Education should activate immediately an expanded Bureau of School Management Services within the Massachusetts Department of Education.**

Local school districts have indicated strongly that the Department of Education should provide services and advice, on request, to assist them in solving problems in various business areas. In response, the department has already proposed furnishing some services to local school districts.

It is the opinion of the Task Force that such services must be provided in the areas of building operations and maintenance, collective bargaining, data processing, program budgeting, purchasing, transportation (already proposed), and volunteers. Additional services may be requested from local districts. These could include accounting, administration, systems and procedures, property control, insurance, health, and attendance.

There are many diverse functions and qualifications of the personnel to staff this bureau. Specific staff qualifications for each functional area have been carefully identified by the Task Force. These, as well as detailed functional specifications of each bureau activity are available within the permanent files of the Task Force. Briefly stated, these functions would include the following:

- ► Provide advice and assistance to school districts.
- ► Plan and help establish training programs.
- ► Disseminate new and timely information.
- ► Develop a staff of functional specialists.
- ► Maintain functional reference libraries.
- ► Direct and coordinate the data collection of the various school districts.
- ► Establish general systems and procedures for installation and maintenance of budgeting by objectives.
- ► Encourage development of cooperative purchasing relationships among school districts.

3. **The Department of Education should engage a professional administrator to direct communications within the department and create a proposed Office for Communications with responsibility for planning and executing a long-range public information program.**

The importance of communicating to local educators and school administrators is inherent in the mission of the department. Thus, the need for gaining public confidence and support should be self evident. Communication is the essence of education but is also an essential function of management. No large corporation could operate efficiently without an extensive internal information system. Further, few companies can succeed without paying attention to assessment of public attitudes and acceptance of its services, products, or place in the community. In complexity, the Department of Education and the state's public school system exceed the largest corporations.

Nevertheless, even though previous studies have emphasized the need for a well-organized public relations program and an effective informational system within the department, none has been created. Study team members noted the information services provided by the Division of Research and Development in the area of data collection and provision of summary reports as public in-

formation and internal memoranda; the output of the Bureau of Public Information; and the output of the Public Information Officer. However, the department does not have adequate professional personnel, a meaningful organization, or sufficient funding to provide the communications service that is needed.

Since the communications officer would speak directly for the department and commissioner, he should have access to the plans and goals of the department at virtually all stages of their development. Furthermore, he should have a personal and regular contact with the commissioner and other departmental officials who determine policy and make decisions at the executive level.

An awareness of policies, recommendations, and forthcoming events in education by the general public and those in the education system contributes toward efficiency of the system. In business, management has realized a substantial return on investment when it utilized improved communications to increase productivity. Also, business can relate direct gains to public relations and advertising its products or services to special sectors of its markets.

The Task Force recognizes the General Court and taxpayers as special sectors of the public education market. Without them, the Massachusetts Department of Education could not operate, make direct payments for special purposes, provide local aid reimbursements, and administer federal aid.

The management principles currently in use, and applicable to school business management, dictate these efforts be coordinated and planned through a long-range program to meet specific goals. Thus, functions of the communications officer must include planning and coordinating information programs for Massachusetts Department of Education personnel, the General Court, the executive branch of the Commonwealth, public school employees, and the general public. The information program could include publications, presentations, training seminars, radio and television, conferences, press relations, advertising, as well as community activities.

Town/City-School Committee Relationship

A good coordinated working relationship between the town or city government and the school committee is necessary to obtain the most efficient utilization of manpower available in these areas.

EVALUATION

The school committee should have the responsibility and the authority to manage its entire operation. It is not good business practice for a city or town to manage part of the operation as is now the case in some school districts with respect to maintenance, operation, and purchasing. Having full responsibility and authority, the school committee would, of course, have the option to contract with the city or town for services on mutually agreeable terms.

RECOMMENDATIONS

4. **The General Court should enact legislation to make the school committee responsible for insurance coverage on school buildings and contents.**

Town administrations which have the legal authority to place insurance frequently do not include school administrations in selection of the type and amount of insurance protection on school buildings. School committees generally operate, maintain, staff, and equip school buildings. Thus, they have primary interest and knowledge concerning the structures and contents.

Insurance coverage can usually be obtained most economically on a group basis. In the case of schools, it can be acquired under the Public Institutional Property (PIP) form, combined with other town real estate possessions, or jointly with other entities under one policy. Therefore, the school committee should be responsible for providing the details of kinds and amounts of coverage on school buildings.

5. **The General Court should enact legislation to invest full authority for purchasing supplies and services used in the school district with the school committee.**

Placing final authority with city or town purchasing agents for acceptance of bid items often results in dissatisfaction with product received by the school district. While the principle of centralizing purchasing practices on a city or town level is basically sound, personality conflicts and lack of sensitivity for user's values can often nullify any benefits gained.

To overcome differences between schools and cities, a common list of items should be reviewed by the school administrator and town purchasing agent at school budget preparation time. Differences between specifications can then be resolved prior to bidding.

6. **Cities and towns should designate a member of the school committee and the superintendent or his appointee as voting members of the School Building Committee.**

Under the existing system, often neither the school committee nor operating personnel such

as the superintendent have a direct, official voice in the design and construction of facilities to be assigned to them. Any influence they can exert on the process, after the educational specifications have been prepared, is informal and indirect. As a consequence, many building decisions cause built-in problems in the new school. Typically, such problems occur in areas of building layout, materials, provision of adequate administrative and support space, and facilities.

The Task Force observed that effectiveness of the final building is directly related to the degree of participation of the school committee and the superintendent. Therefore, such participation should be made a voting one.

7. **The General Court should amend the law to give the school committees in all towns and cities in the Commonwealth authority to maintain the school buildings.**

This recommendation is discussed in greater detail in the section on Maintenance. Basically, it hinges on the fact that several cities have reserved for themselves the function of maintaining the school buildings. This has not been as effective as when the maintenance responsibility is vested in the school committee.

It was found in some cases that maintenance projects were handled by the city under bond issues, which is an appropriate practice for major maintenance items. However, there are indications the procedure has also been used to handle maintenance and equipment items of a routine nature. Although this has the effect of keeping the current tax rate down, final costs to the taxpayers are increased.

8. **The General Court should amend the law to permit school districts to keep their own books of account or contract this function to the parent town or city.**

Implementation of this recommendation will eliminate duplicate bookkeeping. Currently, the law requires the town treasurer to keep the books. Usually, however, the school department also keeps its own set because information provided by the town is neither timely nor in the form desired. Despite the form of this recommendation, it is urged that all towns arrange to keep books and provide information in a manner satisfactory to the schools, so that the bookkeeping function can be concentrated in the town where other accounting operations must necessarily take place. In that way, maximum economies can be effected. The arrangement is working very well in those towns that have recognized the benefits of this kind of cooperation.

9. **The General Court should amend the law to require the town treasurer to pay promptly and without further authorization all purchase orders and requisitions on certification by the school committee or its appointed representative providing the amount due and payable is within the approved budget.**

Such a procedure, together with the bonding of town employees and the retention of the power of the auditor (or selectmen in towns) to examine and question purchase orders, requisitions, and original books of account, provides adequate safeguards and will improve efficiency. In most systems, the additional step of requiring the issuance of a warrant signed by the selectmen or the city accountant has degenerated into an irritating and meaningless formality.

School Committee-Superintendent Relationship

Although education in Massachusetts is the responsibility of the Commonwealth, it is administered at the local level by the school committees. They are faced today with more difficult problems than ever before: angry taxpayers, disturbed students, and demands of employee groups both professional and nonprofessional. In view of this, it is timely to examine from a businessman's point of view the functional relationship between the school committee and its executive officer, the superintendent.

EVALUATION

The manpower represented by the school committee can most efficiently be utilized by setting policies covering major issues and delegating the administration of their policies to the professional administration—the superintendent. In a business sense, the school committee is comparable to a board of directors and should, therefore, be a policy-making body.

RECOMMENDATION

10. **The General Court should amend the statutes to authorize the school committees to delegate executive authority to the superintendent.**

The missions and objectives of the school committees should be directed toward the development of short- and long-range goals as well as plans for their accomplishment. These objectives and plans for implementation must be reviewed and updated on an annual basis due to the constantly changing educational environment and technology. The superintendent must play a leading role in this program.

In addition, the school committees should evolve clearly stated major policies covering principles, guidelines, and directives within which the system is to be administered. The need for written policies reflecting the basic thinking of competent members of the local community has never been greater. Such policy enables the school committee to be consistent and act uniformly in situations where the composition of the board may change somewhat each year. These written policies should be accessible to key employees of the school system and, perhaps, to selected members of the community. When no written policy exists covering a problem, the superintendent should have authority to act. His decision would be subject to review by the school committee at its regular meeting.

The superintendent should be given the authority and responsibility of carrying out all administrative functions for operating the school system. As executive administrator for the school committee, it should be his responsibility to obtain, supervise, and delegate duties to all personnel. He should also have authority to contract for and purchase supplies and equipment within the confines of budget limitations. It is important that the superintendent have major administrative capabilities. He should either have or obtain an associate to function as business manager. This person should have a degree in Business Administration or at least five years of business background. Clearly, some smaller systems with limited resources would find it impossible to meet this requirement. This again points up the problem of system size.

The superintendent should be hired under a contract rather than tenure. Use of a contract will tend to free him from pressure imposed by groups or individuals that may threaten his sudden and perhaps unjustified removal from office. Use of a contract will also cause the school committee to review the problems of the superintendent on a regular basis as the contract comes up for renewal. His performance should be evaluated on the basis of his overall contribution and effectiveness in meeting objectives and administering the committee's policies.

Volunteer Services

An estimated 25% to 40% of most teacher's time is expended on routine administrative paperwork. Significantly reducing these non-teaching hours represents a great potential in obtaining more for the instructional dollar.

In 1968, the Divisions of Curriculum and Instruction and Research and Development in the Department of Education conducted a study of approximately 1,700 elementary and secondary schools throughout Massachusetts. It was found that approximately 1,400 parents or other lay people were serving as teacher-aides. Approximately 66% were paid while the balance served on a purely voluntary basis.

The Task Force found some districts making extensive use of volunteer and part-time employees while others apparently had not explored the possibilities. Almost without exception, reactions to such programs have been excellent with a desire to extend them.

EVALUATION

The majority of volunteers involved in education represent local citizens and civic organizations who want to help in whatever way possible. While the impact of this group can be significant, the background and experience of these volunteers does not necessarily provide the expertise required to solve the vast number of administrative problems facing today's educators.

Local business and industry has a reservoir of talent that can be employed for classroom assistance on specialized but related topics. Assistance can also be provided in many fields of business procedures and practices. Purchasing procedures, selection of office equipment, maintenance techniques, and transportation scheduling are examples of areas where business and industry have had to perform economically and effectively for many years.

A reduction in present teaching staffs may not be possible, but the requirement for additional teachers could be reduced. However, additional time available to teachers could be utilized by holding extra classes or increasing the number of pupils. This can be accomplished without reducing the time available for each individual in the class. Consider also the potential community relations value of a well-organized volunteer program. A group of citizens giving their time in the school system provides a built-in sounding board for public opinion and support of acceptable school policies.

RECOMMENDATIONS

11. School committees should increase solicitation of volunteers through civic organizations and local citizens to aid local school administrators.

Successful volunteer programs are in use in some school districts and results substantiate the fact that potential savings in salary expenses exist. The key to a successful operation is to delegate its development to an individual with initiative and interest. Today, volunteer programs are successfully operated by school personnel as well

as community organizations. However, the program must originate and have active support from the school district.

The problem of volunteer assistance not being dependable has been successfully resolved by proper solicitation, training, and follow-up. This type of civic service can have the same appeal as, for example, hospital volunteers.

A local community group may well serve as the organization behind the school volunteer movement if approach, cooperation, and appreciation are evident. Diverse functions which could be performed by volunteers or part-time personnel include libraries, activity periods, teachers aides, special reading assistance, lectures on special topics, field trips, clerical work, custodial duties, drivers for special purposes such as special classes, athletics, field trips, and tutoring.

Solicitation of personnel was through direct personal contact with groups as well as use of newspapers, radio, television, and individual school publications.

The amount of ingenuity and planning directed toward the use of volunteer and part-time personnel will directly determine the dollar value to the system. Potential sources of volunteers include the PTA, women's clubs and civic organizations, and colleges. Additionally, help could be provided by students who may perform clerical jobs as part of their classroom training. Retired people, often eager to be of service, may provide capable personnel at wages which do not interfere with social security payments. Furthermore, assistance could be obtained from established organizations such as School Volunteers for Boston, which has obtained, trained, and organized some 1,200 volunteers for the city's schools.

The School Volunteers of Boston solicit, train, organize, and direct their program at a cost of approximately $46 for each volunteer per year. Translated into time spent in the schools, this amounts to a cost of $0.42 per hour, per volunteer.

An appraisal of the dollar value of volunteers and part-time assistance cannot be made. It depends upon the mix of the volunteers and part-time assistance as well as the extent of their use. One school system indicated that volunteers in its library program saved approximately $4,000 a year per library over the past two years. What is the value of 25% of teachers' time which could be made available for teaching? As a guide, the minimum teacher's starting salary is $5,750 and 25% of this amounts to $1,438.

There is no question, however, that this is a resource of personnel which can be of extreme value to the school districts.

12. School committees should solicit volunteers from local business and industrial organizations to assist in special instructional areas and administrative matters.

Business organizations, as well as school systems, should be anxious to support and expand this activity. The local business community is a reservoir of experience which could be tapped for classroom discussion on specialized subjects. Their help should also be solicited for assistance in the solution of business and operating problems.

School management need not hesitate to seek help on individual problems because business management is well aware of the value of education in the community. They will and should gladly share their expertise with school management officials.

Collective Bargaining

Since the enactment of the statutes of 1965 which amended Section 178 of Chapter 149 of the General Laws of Massachusetts, collective bargaining has gained impetus in the Commonwealth's school districts. This has increased the cost of elementary and secondary education.

Wages of teachers and nonprofessional personnel which represent about 80% of the average school district budget, are rising rapidly. Additionally, other contract provisions are being negotiated to affect working conditions and fringe benefits. While not directly related to wages, nevertheless, they raise the cost of education.

Collective bargaining has a very strong impact on attitudes and relationships between teachers, principals, nonprofessional employees, superintendents, school committees, pupils, and parents. This has forced a modification of the historic attitudes and prerogatives of school administrations as well as employees to comply with collective bargaining laws.

EVALUATION

Leadership, increased understanding, and guidance are necessary if the results of collective bargaining in the school systems are to be equitable for employee, pupil, and taxpayer.

Elementary and secondary school teachers in the Commonwealth are well organized and professionally represented through membership in the Massachusetts Teachers Association, the AFL-CIO locals and various independent unions. They have statistical information of a state-wide nature, and the services of professional labor negotiators. By contrast, school committees, with responsibility for collective bargaining, are often less

informed. Many lack professional guidance and frequently fail to recognize the need for expert assistance.

Other than the preparation of an excellent manual on collective bargaining, no strong leadership, assistance, and information to negotiate effectively with the unions has been supplied from the state level. Under these conditions, bargaining can become an emotional rather than an intellectual process. As a result, everyone suffers.

In some instances, the superintendent is placed in the awkward position of being the school committee's negotiator. Regardless of competence, his relationship with teachers and employees may be damaged.

There seems to be a growing tendency for the labor unions to extend demands into areas which should be the prerogative of administration. It is important that inexperienced bargaining and attempts to meet these demands do not result in the erosion of the authority of school management.

Nevertheless, since one of the basic areas of concern among teachers is curriculum, there should be an opportunity for continual dialogue on this matter between teachers and management. Discussions should not be a part of collective bargaining sessions, but be under constant reexamination by the teachers and management. This group will only be meaningful if it is given strong support by the school committee which must implement constructive curriculum suggestions for improving teaching. Such a procedure should help the process of collective bargaining to run more smoothly.

The subject of tenure may have to be reappraised in view of the greater security that teachers now enjoy through union membership. There is a growing tendency to strike illegally to enforce union demands. This can have a serious effect on pupils' respect for law and authority. A report now being prepared for the Massachusetts Advisory Council on Education under the supervision of Dr. John S. Gibson points out this growing problem. A statement from the critique indicates the need for collective bargaining of a professional nature.

RECOMMENDATIONS

13. **The Department of Education should designate within the Bureau of School Management Services an individual responsible for the provision of professional services to school administrators and school committees.**

Strong leadership and service is needed to assist the local school authorities with collective bargaining. Therefore, programs should be developed to establish effective collective bargaining procedures. These programs and workshops should be instituted, based on local requirements and conducted jointly with professional and nonprofessional employee organizations, and local school authorities. In addition, consulting service should be available to aid all parties involved with collective bargaining, mediation, and conciliation.

14. **The Department of Education should distribute the existing collective bargaining manual to all school authorities.**

The manual entitled A Guide to Collective Bargaining in the Public Schools of Massachusetts should be distributed immediately to all local school authorities and employee organizations. This informative and instructional manual was prepared by a committee of the Massachusetts Board of Education Task Force on Collective Bargaining. To reflect any changes or new provisions in the General Laws pertaining to the subject, it should be updated and redistributed as soon as possible.

15. **School committees should secure the services of a professional negotiator to represent the school committee in collective bargaining sessions.**

The school committee should not attempt to bargain directly with teachers. Teachers, as a rule, are represented by professional negotiators. In a great many cases, this places the school committee at a disadvantage. Collective bargaining is so time consuming that a school committee is hampered in performing its other duties if it also attempts to negotiate with teachers.

Originally, one of the objectives of collective bargaining was to afford an opportunity for teachers and school committee members to meet and exchange ideas. As bargaining became more complicated and professionalized, these meetings have, in many instances, generated more heat than light. The areas of discussion have expanded beyond the subjects of wages, hours, and conditions of employment prescribed for collective bargaining. Without the advice of negotiators, school committees may bargain away their management prerogatives because they are generally not able to determine the technical parameters of the conditions of employment. The first business of a professional negotiator would be to define these measures before formal negotiations began.

16. **School committees should adopt a policy that the superintendent act only in an advisory capacity in collective bargaining.**

Superintendents are a part of school management and should not enter collective bargaining except

in an advisory capacity. The ability of a superintendent to manage is seriously jeopardized when he directly combats demands of teachers whose cooperation he must have for a successful school administration.

17. **The General Court should amend the law to exclude principals and assistant principals from any collective bargaining unit.**

The principal is the director of his school in the same sense that a superintendent is the executive officer of a school system. Therefore, like a superintendent, a principal and his assistant should be excluded from the definition of employee under the statutes. Taking a vital member of the management team out of the employee collective bargaining group would constitute a change in the Collective Bargaining Act.

The principal is responsible for administration of the teachers in his school. Thus, his executive position is jeopardized by abdicating that role during collective bargaining. Not only is the principal's expertise and authority denied to management in collective bargaining, but he is often in an anomalous position of initiating the teachers' demands with respect to wages, hours, and conditions of employment.

Facilities

School construction is big business in Massachusetts. In fact, it is the largest single construction specialty in the state. During 1969, the total of low bids for elementary and secondary school construction amounted to $173-million, or 27.8% of all construction. The next highest area was for highways, which totaled $122-million, or 19.6%. Other items such as office buildings, airports, and the like, are relatively minor. Expenditures, for comparison, are illustrated in the table shown directly below.

MASSACHUSETTS CONSTRUCTION EXPENDITURES — 1969
(millions of dollars)

Elementary and secondary schools	$173
Highways	122
Higher education facilities	103
Hospitals	56
Government service	52
Private manufacturing plants	31
Offices	25
Stores and shopping centers	21
Airports	19
Other items not listed	20
Total	$622

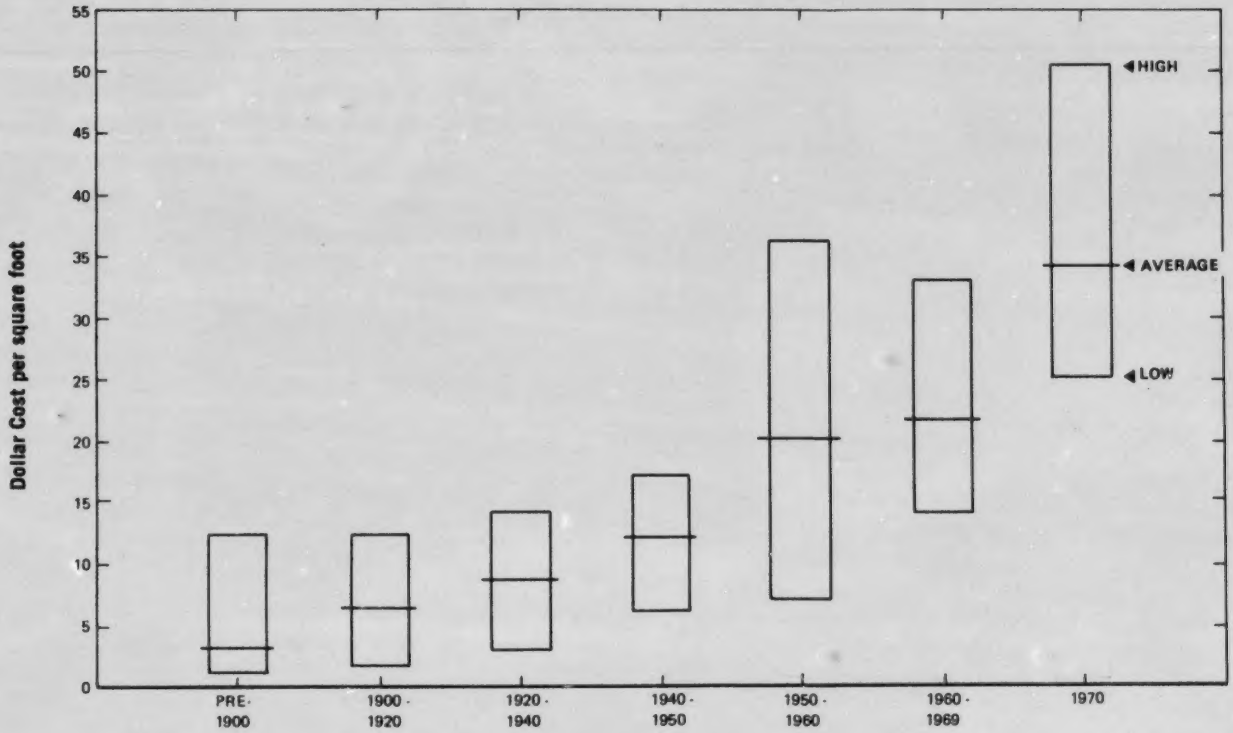
EVALUATION

Each new school is planned and built by a community as an individual project. No advantage is taken of mass buying, standardization of construction methods, or experience gained on other facilities. On the average, each community builds a new school every five or six years. Thus, although the state-wide volume is very large and fairly constant on a yearly basis within an individual community, volume is quite small and highly sporadic. There is no continuing source of design, construction, or cost expertise within the community. Such expertise, furthermore, is not available at the state level. Only in matters of school safety, health, and educational requirements does the state provide extremely helpful assistance to the communities.

In view of the fragmented approach to school building construction across the state, it is not surprising that the results are uneven. Within any particular time period, the building costs per square foot vary almost two to one from school to school. Admittedly, some of this variation is to be expected because of the different types of schools, differences in local labor rates, and other factors. However, a variation of two to one is an indication that not all communities are effective in providing quality schools at a reasonable cost. The high costs per square foot are not always found in the affluent districts. Those poorer communities which build high-cost schools exemplify the penalties exacted by fragmentation of the school construction program.

To complicate matters, school facility costs as well as bond interest rates are rising. The graph on the next page shows historical trends of school facility costs in Massachusetts. Basic information was derived from data supplied by individual school districts and the School Building Assistance Bureau, and includes all costs except for the site. In recent years, construction costs alone have been rising at a rate of about 10% per year. The largest part of this growth is caused by wage rate increases resulting from trade union negotiations. However, a significant impact has been manifested by an escalation in material costs. Furthermore, there is no indication that the roughly 10% annual increase is likely to change in the near future.

HISTORICAL TREND OF SCHOOL FACILITY COSTS



This dynamic inflationary spiral has several harmful effects, aside from the direct increase in dollar costs. For example, in making preliminary cost estimates for a new school an architect can easily underestimate the costs that will prevail at the time firm bids are received. Thus, when bids exceed the preliminary estimate, a community may refuse to authorize the required bond issue. At this juncture, several alternates may be employed. A common approach is to have the current or a different architect draw up plans for a smaller school which would not meet the known needs. This requires time and during the hiatus, construction costs per square foot would increase at a steady rate. Oftentimes, taxpayers end up paying the initial bid price for a school which is 10% or 15% smaller in size than the original plan. Immediately, the community is under pressure to provide additional school space. Consequently, the cycle begins again.

This situation is not unique in Massachusetts. A recent study by the City of New York Planning Commission indicated that delays added $30-million to the cost of all schools planned in 1969. The study notes, " . . . the longer a school is delayed in the planning and design process, the more its construction will cost when the school finally reaches the construction stage."

The costs of building a new school are highly visible to the taxpayer, more so than the annual school operating budget, since the building cost appears as a lump sum in a particular year. In addition, a new school is an ever-present physical entity, and any features not to the taxpayer's liking can readily be pointed out to neighbors. Thus, comments on "monuments to architects," "contractors' errors," and the like are common. These comments reflect the taxpayer's uneasy feeling that he has not received full value for his money. The situation resolves itself into the following factors:

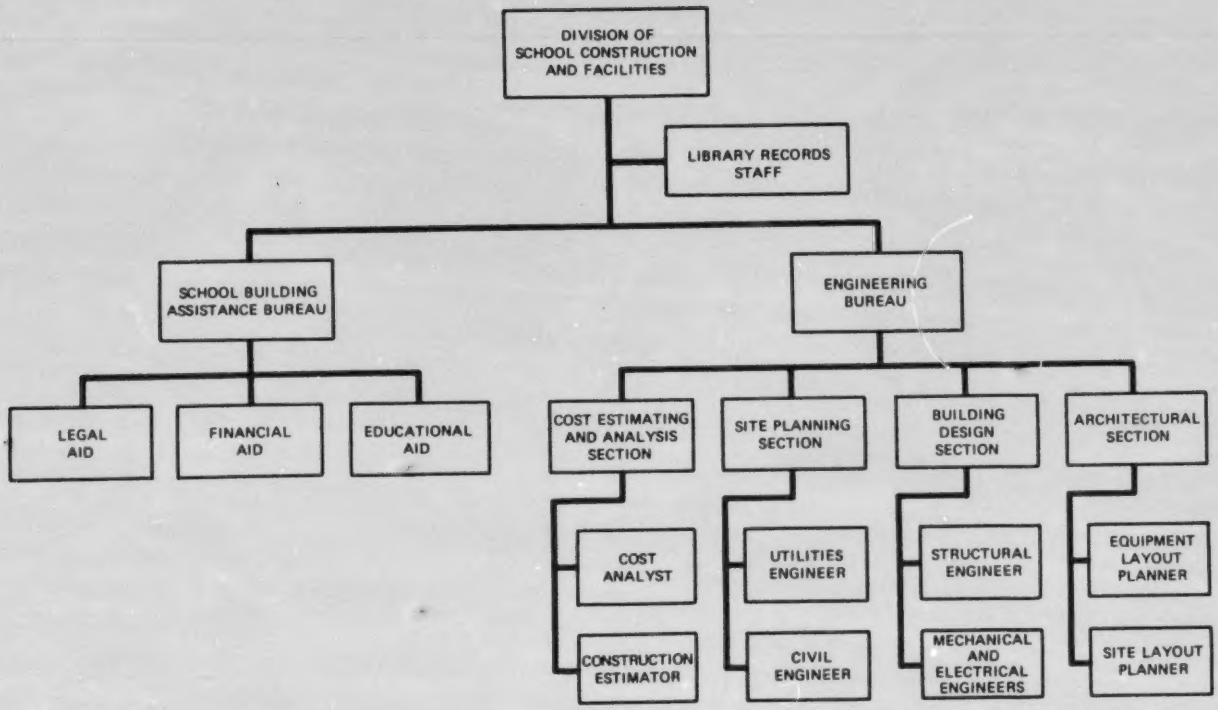
- A large state-wide, but fragmented management of the school construction process.
- Widely varying per-square-foot costs.
- Rising overall building costs each year.
- Taxpayer dissatisfaction.

RECOMMENDATIONS

1. **The Department of Education should create a division of School Construction and Facilities as soon as possible.**

Currently, the School Building Assistance Bureau is responsible for rendering aid in legal, financial, educational, and site planning functions. These

PROPOSED ORGANIZATION
DIVISION OF SCHOOL CONSTRUCTION AND FACILITIES



operations, however, are only part of the assistance needed by school districts. The proposed division would have an additional bureau as well as a library records staff. The organization chart shown directly above depicts the suggested arrangement of the School Building Assistance Bureau, the Engineering Bureau, and the library records staff.

This division would have complete authority in dealing with matters presently covered by the School Building Assistance Bureau. Additionally, it would provide services in the areas of new building construction and rehabilitation projects, and consolidate and finalize all building plans. Further, the division would provide engineering data and specifications, as well as furnish information on building materials with longer life and better maintenance values. It would also provide recommendations on cost saving items and methods. In addition, it would compile records, cost data, surveys, reports, studies, and place its stamp of approval on all plans and specifications submitted by any school district. Under this new structure, the site planning activity would be transferred to the Engineering Bureau. The library records staff would be responsible for accumulating technical data on school building design, construction, and educational specifications. It would provide a facility to store this information which would be made available to all school districts.

About 12 additional people will be required to staff this function. However, in services rendered, a minimum 5% savings per project can be achieved by this new organization. School districts will benefit by this change because reliable information and data will help in compiling and formulating plans for new or old construction projects. Part of the savings will be passed onto the state; this will help offset the added expenditure. The annual cost of the additional personnel approximates $200,000. However, savings will be about $5-million per year, based on an annual construction level of $100-million. This recommendation is referred to in the Facilities Planning and Acquisition section of School Business Management System.

2. **The General Court should establish a central state agency to contract for construction of all elementary and secondary public school buildings in the Commonwealth.**

This central agency, acting as a single customer for all school buildings, would stimulate wider competition and more favorable contract terms and conditions than any individual town. It could

negotiate contracts containing positive and negative incentive provisions as well as require access to detailed cost information on specific contracts. Since all data on contract performance would be available within the central agency, records could be kept of performance of individual contractors and architects. At least three possibilities exist for this central agency. For example:

- The proposed Division of School Construction and Facilities, within the Department of Education, could have the contracting function assigned to it.
- A Bureau of Public School Construction, similar to the Bureau of Building Construction, could be established in the Department of Administration and Finance.
- A school building authority with an independent status that is similar to the State College Building Authority, could be established.

The central agency would function much more effectively if the public bidding laws were modified to allow the use of negotiated contracts.

3. **The General Court should enact legislation permitting cities and towns to use the Commonwealth's credit rating to minimize bond interest costs.**

At present, each individual town must float its own bond issue for a new school. However, only four or five municipalities have credit ratings which are higher than that of the state; most have lower ratings. If the state's rating could be used by the towns, appreciable savings would result. Annual school building costs, on a state-wide basis, average over $100-million. Thus, if a 1% reduction in bond interest cost could be realized by taking advantage of the state's rating, annual saving would be $1-million.

There are several ways in which this approach can be mechanized. Some are being implemented in other states. Vermont, for example, has established a municipal bond bank which buys municipal bonds issued by communities and, in turn, floats bond issues using the state's credit rating. Connecticut has recently enacted legislation enabling the state to buy municipal school bonds at 4%. This approach, of course, goes beyond the suggested concept and amounts to additional direct financial assistance by the state. Another approach would be to have the proposed state contracting agency handle the bond issue in the name of the state and then lease the schools back to the towns. Payments from the towns would be used to retire the state bonds.

No matter which method is used, the savings to the taxpayer would be appreciable. This recommendation is referred to in the Facilities Design and Construction section of School Business Management System.

4. **Cities and towns, with the assistance of the Department of Education, should promote the development and use of the modular systems approach to reduce construction costs.**

Based on experience in California, Toronto, and Florida, overall savings approaching 25% can eventually be realized using modular design and construction techniques. Some activity in this area has already started in the state; the city of Boston is now planning a prototype school based on modular construction. The Massachusetts Advisory Council on Education has recently contracted with Campbell, Aldrich, and Nulty, Boston architects, for a study entitled "A Study of School Building Costs." This study will highlight the modular systems approach.

The actual achievement of significant savings requires a sizable volume of construction. The total annual volume in the state is about 4-million square feet. Thus, a central state contracting agency fits logically into the total scheme. An incentive that could be used to encourage towns to follow this route would be to allow a higher percentage of state financial assistance to towns electing to use modular construction.

The proposed Division of School Construction and Facilities and the state contracting agency, discussed in previous recommendations, should take the lead in this development.

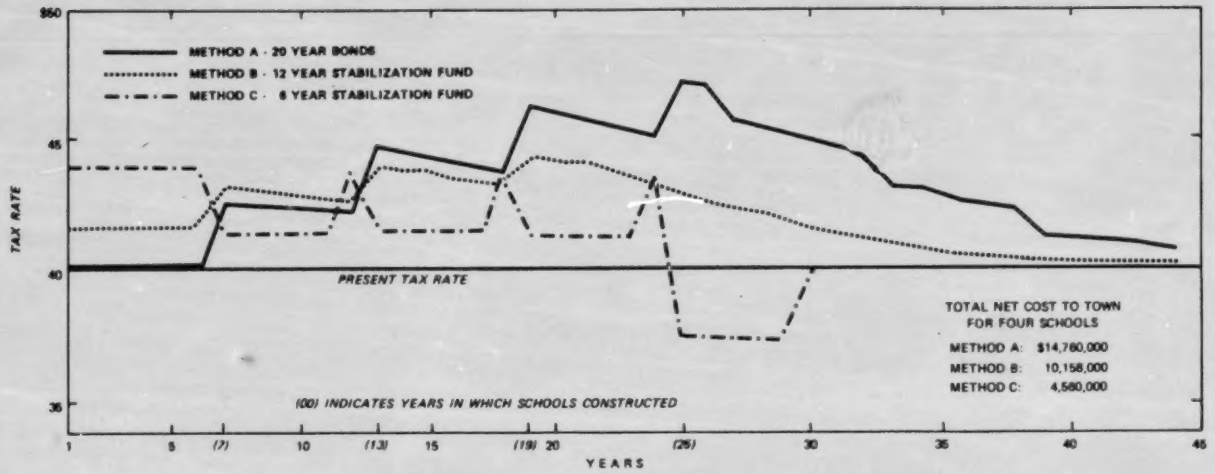
To take full advantage of modular construction techniques, the public bidding laws should be changed to remove the "low-bid" restriction. This recommendation is discussed in more detail in the Facilities Planning and Acquisition section of School Business Management System.

5. **Cities and towns should establish local stabilization funds for new school construction to reduce financing costs.**

Stabilization funds are allowed under the General Laws, but they are not commonly used. If such funds were to be used in a town with needs for new facilities, almost 70% of the total cost could be saved. Most of the savings results from a reduction of interest costs. For example, an average loan of $3-million has an interest charge of close to $2-million over a 20-year period, assuming a 6% interest rate.

The graph to the right depicts effects on the tax rate by financing a school building program through three different methods of funding. Method A, the conventional bonding method in

EFFECT OF THREE FUNDING APPROACHES ON TAX RATE



use today, costs three times as much as Method C which uses a stabilization fund.

To more easily understand this saving, a brief description is in order. The hypothetical town used in the example has an assessed valuation of $100-million and a tax rate of $40 per $1,000. The town plans to build a new school six years from now and three more schools, one every sixth year. Thus, there are four buildings to be constructed over a 24-year period. These schools are estimated to cost $3-million each and state aid is expected to be 40%. The illustration shows the effect on the tax rate for funding such a building program. For clarity, the tax rate is assumed to remain constant except for the increases resulting from building costs.

Method A represents the effects of the conventional bond issue which is floated when the buildings are constructed and paid off over a 20-year period. The total net cost to the towns, using a 6% interest rate, is $14.76-million which includes principal and interest costs, minus state aid.

Method C, on the other hand, represents the establishment of a six-year stabilization fund wherein the money for the first school is completely raised before the construction begins. Such funding is continued throughout the building program. This method benefits further by being eligible for accelerated state aid. The total cost of this method is only $4.56-million, roughly 30% of the conventional bonding method. Costs include the principal, minus state aid and 7% interest income earned on the fund as it is accumulating. In fact, the town need only raise about $2.4-million for each building. The accrued interest will account for the remaining $600,000 needed to finance each school.

Method B represents a combination of the two methods. It includes establishment of a 12-year fund and use of bonds as required to make up the difference. This plan costs the town about $10.16-million, a savings of 30% when compared to Method A. The smaller savings in this instance are offset by a smaller tax rate increase in the first few years of the program.

There are an infinite number of other alternatives. All of them, however, are aimed at reducing the high interest costs of bond issues. For example, a town may have to start its building program immediately, not six years from now. If a stabilization fund were to be set up, the first school would still have to be financed by a bond issue. Even under these circumstances, savings of up to 50% can be realized. If each town in the state would use the stabilization fund approach, up to $70-million annually could be saved. The possible effects of inflation should, of course, be considered in establishing a stabilization fund. Considering that each town will take an individual approach to its needs for financing, it seems reasonable to expect that half of the maximum savings, or $35-million, might be attained.

6. Cities and towns should make early decisions and commitments to new buildings.

The inflationary rise in construction costs puts a premium on time. Although there are no factual data available for all school districts, it is estimated that most schools are built two to three years after they are needed. Thus, using a

conservative value of building cost index growth of 10% per year, the price of each school is 20% to 30% higher than it need be.

No taxpayer wants to feel he is being stampeded into committing himself to support an expense of several million dollars without being convinced the expenditure is worthwhile and necessary. The process of arriving at a final decision by the community is a lengthy one. This is the logical reason that most schools are not built when they are needed.

How, then, can this process be shortened? The obvious answer seems to be in having each district develop a viable long-range building plan which would be updated periodically. This last proviso is the key to the success of any long-range plan. Many communities have generated excellent long-range five- to 10-year plans, only to have them hopelessly outdated and cast aside after a year or two. Most successful industrial concerns have learned that a long-range plan must be continually updated, often on a semiannual or annual basis, if it is to remain viable in the face of changing conditions.

A successful long-range plan for school construction in any district should cover a span of at least 10 years. It should include an analysis of building needs based on condition of the present plant and estimated pupil population. In addition, it should include an estimate of the costs involved which would incorporate the projected effect on tax rates over the years, a plan for site acquisition, and preliminary plans for the next school to be constructed. Such a comprehensive plan will allow early discussion among all interested parties. Most important, a concerted campaign should be conducted on the part of the school department and the town building committee to involve the taxpayers in the plan, and to update it continually making it a working plan, not a book filed in a cabinet. Thus, the taxpayers would be in a position to reach a decision and a commitment on each new school at least two years earlier than at present. This would result in saving about 25% of the prime building cost. On a state-wide basis, new school building volume is over $100-million per year, and bond costs add at least another $50-million to this figure. If only half of this construction were to be committed two or three years earlier, annual savings to the taxpayers would approximate $20-million. This recommendation is also referred to in the Facilities Planning and Acquisition section of School Business Management System.

Section IV

School Business Management System

The business management section is concerned primarily with school district operations. It is, in reality, a family of functions including noninstructional activities which are usually the direct responsibility of a business manager. Additionally, other noninstructional functions are discussed under Interfacing Systems. These are generally not of concern to the business manager.

Through school district action, many of the recommendations presented can be put into effect immediately to improve the business management system. However, the system will become more effective as recommendations made in preceding sections are implemented by the Department of Education and the General Court. In some instances, these recommendations are repeated to emphasize their importance.

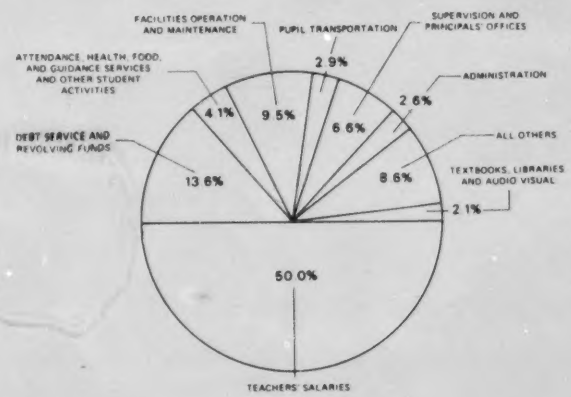
A system is a timed-phased sequence of things to do and how to perform them to accomplish a prescribed mission efficiently and effectively. This requires people, organization, and facilities which must be part of the system. A successful system meets the following criteria which should be kept in mind when establishing the proposed system.

- ► The individuals involved are competent and their responsibilities are clearly defined.
- ► The chain of command and lines of communication are firmly established.
- ► The organization is compatible with its assigned mission.
- ► The laws, regulations, and policies which affect the system are well known.
- ► The required facilities, equipment, and supplies are readily available.
- ► The system provides a built-in capability to introduce all required changes most easily and effectively.

It will cost money to establish a system and the amount will vary significantly from district to district. The use of help from the business community will reduce overall costs. Smaller districts can benefit from cooperative efforts as outlined in the section devoted to School District Cooperation. These costs are really an investment with a high yield potential.

The Task Force has estimated, in certain areas, the reductions in operating expenses which could be achieved through the systems approach. In other areas, the benefits include many intangibles and, therefore, no dollar value has been assigned. However, the best way of getting the most out of the noninstructional dollar is through good management and operational systems. The chart, below, illustrates the percentage breakdown of the total public school expenditures in the 1969 fiscal year. (Source: Facts About Education in Massachusetts, Feb. 1970. Division of Research and Development, Department of Education).

DISTRIBUTION OF TOTAL SCHOOL EXPENDITURES ($949-MILLION) YEAR ENDING JUNE 30, 1969



Fiscal System

The budgeting, accounting, and auditing procedures which have developed over the years are a patchwork of independent laws and regulations. They are designed to ensure that every dollar appropriated is expended for the exact purpose and in the manner described in the "budget" presented to the town meeting. Because of this approach, wasteful and unnecessary procedures have developed. As a result, they are not effective even for this limited purpose as they might be. No attention has been paid to developing the important informational function of the fiscal system. Furthermore, no method has been provided for discovering whether the funds have been effectively expended for the intended purposes.

Budgeting

Expanding business and cultural requirements of our society have led to wider programs of education. The basic educational objectives of the state or local community must, therefore, be reexamined. It is generally accepted that a basic education should be provided at public expense for all children on an equal basis. However, there is no agreement on what comprises a basic education and what constitutes an enriched program. In this doubtful area, the taxpayer needs information on the cost of proposed programs and a report on how well they have achieved their objectives.

A budget is a financial plan by which funds are allocated to a project or program. The process of preparing a budget forces those involved to think about requirements to attain stated objectives. Today, taxpayers who underwrite requested budgets desire to hold their agents accountable for meeting the budget and reaching the stated goals. This accountability requires an indication of program goals and a measurement of achievement.

EVALUATION

To meet this taxpayer concern, the traditional form of budgetary presentation must be revised.

- ► Resources to support the proposed budget must be indicated.
- ► Programs planned and objectives including the number of participating pupils should be part of the budget presentation. Taxpayers may then judge the relative merits of proposed programs with knowledge of the cost per participating pupil.
- ► Cost elements of each program must be identified and tabulated. These include salaries, supplies, materials, heat, custodial care, maintenance, and the like.

The Table of Accounts used in the Commonwealth displays these dollar amounts in great detail. It is compatible with that used by the Massachusetts Department of Education and the U. S. Department of Health, Education, and Welfare.

Budgets are prepared and approved based on amounts allocated to these accounts. The budgets are not, however, meaningful presentations of ongoing programs to further the education of citizens in Massachusetts. In most cases, they are incomprehensible masses of figures which confuse the average taxpayer. Moreover, the Table of Accounts does not disclose either the total cost of education nor its contributions to nonschool activities and programs of the community. For instance, interest costs and bond redemptions for school building construction do not appear in the school budget.

This table makes use of seven digit code numbers. The first four digits identify functions such as Administration, Instruction, Operation and Maintenance of Plant, and Acquisition of Fixed Assets.

The budget is usually presented as summarized totals of these accounts. These dollar numbers are interesting for an analytical appraisal of the costs of the functions indicated. However, they are not helpful in answering the question as to why taxpayers are being asked to spend their dollars.

The "so called" program areas, covered by the budget, are identified by the fifth and sixth digits of the accounts code numbers. They are broken down under the following headings: Not Classified by Program Area, Elementary Schools, Junior High Schools, Senior High Schools, Beyond grade 12, Community Colleges, Adult Education, Adult Civic Education, and Continuation Schools. These are classified as "so called" because they appear to identify the age brackets of pupils and not the type of program offered.

The last of the seven digits in the usual account code identify objects to be purchased. They are: Not Classified, Teachers Salaries, Clerical Salaries, Other nonprofessional salaries, Contracted Services, Supplies and Materials, Other Expenses, Principal and Interest, Land, Buildings, and Equipment, and Transfer.

Programs of instruction at all levels are becoming more complex and are geared to differing pupil requirements. At the high school level, elective courses are now the rule. The number of these

offerings is likely to increase as the body of available knowledge increases.

All programs have a cost and they are offered to varying numbers of pupils. Therefore, the taxpayer is entitled to know what the cost per pupil is for each program and make a choice between them on a priority basis. For example, a program-oriented presentation might disclose that a course is offered because of the proficiency of a faculty member and not because there is an educational need in the community.

Budgeting by objective, already a common technique in the business world, offers an answer to this need. Through this technique it is possible, once a plan has been agreed upon, to identify alternative means. It can be used to budget those alternates in terms of objectives and measure effectiveness of the means selected in terms of results and dollars expended.

Recently, much has been learned about this type of approach in educational circles, largely because it is becoming clear that education needs both direction and accountability. In Massachusetts, the New England School Development Council is one group which has done some preliminary work in the area of program budgeting. Much of the frustration among teachers and students arises from a lack of agreement on goals and objectives and a feeling that little progress is being made towards whatever goals and objectives may be generally accepted. Equally, the taxpayer is frustrated by lack of understanding of goals and objectives and the absence of reliable measures through which he can decide how his money is to be spent. Further, there is no way of measuring whether it is, in fact, being spent effectively for the intended purpose.

Unfortunately budgeting by objectives frequently described under the title of Planned Programming Budgeting System or PPBS seems to have become surrounded with a certain amount of mystery. It has been considered a rather esoteric process that could only be dealt with by experts. One difficulty that seems to have baffled many administrators who have tried to adapt this technique to educational systems is the problem of allocation of administrative and other overhead items as well as supportive services such as audio-visual aids, guidance counselors, and the like to individual programs. Obviously, this is a process which can be quite subjective and cannot be carried out with complete accuracy. Nevertheless, approximations can be made which are adequate for the purpose. They are reliable as a comparative measure and, in any case, create only a small percentage of error. This is a problem inherent in any cost accounting system and is one which no longer presents any serious difficulty to cost accountants in business or finance. The amounts which must be allocated to each program vary from a high of 40% to a low of less than 10%. Where the amounts are large, the allocations tend to be fairly obvious because they are dealing with easily identifiable items such as audio-visual aids or remedial teaching. On the other hand, items that are harder to allocate—such as light, heat, or administration represent a much smaller proportion of the total percentage open to dispute and are in the area of 1% or 2%. To neglect the clear value of program budgeting because of possible variations of this magnitude seems unduly pedantic.

The time period covered by a budget request will usually be one fiscal year. Nevertheless, many programs are presented which cover a longer period. Only that portion of the total cost which will be paid for out of the year's operating funds can be budgeted in the current year. However, the total continuing cost, and the term of years that it is expected to cover, should be part of the presentation. Only if those responsible for planning budgets are willing to reveal these costs, and those responsible for approving them are willing to commit themselves and the community to the expenditures involved, can budget planning be effective. One important cause of waste in our educational system is the partial implementation and subsequent abandonment of projects.

Preparation of the budget is a complicated process. It should begin with a request at the point where the function is to be performed or the object used. Similarly, good management requires that any change or deletion of an item requested in a budget be communicated back to the initiator of the request and he should know he will have an opportunity to indicate his priorities. If such communication does not take place, it will result in budget padding and other defensive attitudes on the part of teachers who feel their effectiveness is being threatened.

The estimated cost totals of the functions and objects should be allocated to programs and presented as a budget request. The programs having been presented and approved with component costs established, the budget should be approved as one total. If responsibility for the administration of the school system is to be delegated by the school committee to the superintendent, such authorization should carry with it the right to make adjustments within the budget as needed. This does not, of course, mean that the reported results for the year will not reflect a strict comparison with the budget. As long as this type of accountability is required, the right of the super-

intendent to overspend on items while staying within the budget total will result in savings to the taxpayer. There will no longer be any inducement to expend money unnecessarily to avoid turning it back to the general funds of the community.

An inherent part of the presentation of any program is to establish and identify the resources which will support the program. Of most immediate interest to the taxpayer is the revenue from local sources such as real estate taxes and income from the Commonwealth which is usually in the form of reimbursements for expenditures already budgeted, such as transportation, special education classes, and vocational education and revenue from the federal government, which reflects the impact of school population and is usually a direct grant, such as school lunch act, commodity distribution, school maintenance, and special milk program.

With a few exceptions, most of the federal or state aid funding generated by or for the school program is paid into the general fund of the community and is not reserved for use by the school department. It is difficult to sustain the principle of school department accountability unless the department is given entire responsibility for its revenue and disbursements. This does not prevent the accounting or bookkeeping operations being contracted out to the city, town, or any other outside body with control being exercised through periodic reports.

The budget for disbursements, should, for the promotion of understanding by the average taxpayer, be presented as simply as possible for anticipated programs of the school system. The Table of Accounts used to supply data in preparing the budget may be as complex as required to meet the needs of state and federal qualifications. These accounting complexities are administrative details, but the budget does not need to show them. Without this basic understanding, there is little possibility that either the educators or the taxpayers will ever be satisfied with the performance of the other.

RECOMMENDATIONS

1. **The General Court should enact legislation requiring all school committees to submit budgets that are program-oriented rather than function-oriented.**

This action will further public understanding of the objectives of school programs. Additionally, a uniform format will facilitate comparison between systems. Furthermore, it will create the opportunity to make choices between programs. Such legislation must be backed up by an information program conducted by the Massachusetts Department of Education to demonstrate how a simple but adequate program-oriented budget can be installed in a modest-sized school system. This should be a function of the Bureau of School Management Services as described in the section entitled Manpower.

2. **School committees should approve the school budget as one total.**

This procedure would permit the superintendent to make transfers freely within the overall budget. Some systems already operate on this principle. However, there is considerable opposition from those who favor tight controls. Under the proposed system of program budgeting and strict annual accountability reports, actual results by program compared with budget will be available for scrutiny and the extent to which the superintendent has used this privilege will be immediately apparent. The ability to make transfers will result in economies because there will be less inducement to spend money unproductively to avoid returning it to the general funds of the towns.

3. **The General Court should enact legislation that school budgets display revenue sources and contributed services, all anticipated expenditures for whatever purposes within or without the school system, and indicate the net amount to be raised by local taxation.**

The present system is not completely candid about school costs. Currently, the usual budget does not disclose the value of services contributed by the school department. In addition, the cost of repayments on school bonds and the cost of interest payments on such bonds are not divulged. Last, but not least, the contribution made by the Commonwealth is not disclosed.

4. **Local school committees should require all school superintendents to make a report at the end of each school year showing the financial results by program compared with budget and also the educational results compared with those forecast when the budget was prepared.**

Without this strict accountability, the primary purpose of program budgeting would be nullified. The freedom of transfer within the budget conferred on the superintendent as stated in the previous recommendation would also be unwise without this protection. The form of this report should be designed by the Department of Education which should receive copies of all completed reports.

Accounting

For purposes of accounting, as opposed to budgeting, the system and organization of accounts presented by the Massachusetts Department of Education appears to be adequate. However, effort is duplicated, some practices are wasteful, and security procedures are inadequate. Statutes require that accounts shall be kept by the town accountant. Nevertheless, nearly all school systems duplicate the accounting procedures with modifications to meet state and federal educational requirements. Additionally, the General Laws require bills and orders for payments of all departments be examined by the town accountant who then issues a warrant upon the town treasurer. The state's statutes also provide that the auditor (or selectmen) may disallow for payment any bill or pay order if he considers it fraudulent, unlawful, or excessive. Finally, the town treasurer is the only person authorized to pay all bills.

EVALUATION

The complicated system of checks and balances leaves open the possibility of extended delays, extra paper work, and misunderstanding between officials in some cases motivated by political and personal considerations rather than a desire for financial control. This in turn leads to loss of discounts, reluctance of suppliers to quote low prices, and general demoralization of town employees.

The laws of the Commonwealth provide for retention of certain records but there is no provision for their destruction. This problem is also discussed in the Management Information System section as it relates to attendance records. From observations, cash handling procedures were considered extremely poor and not consistent with sound financial practices.

RECOMMENDATIONS

5. **The General Court should enact legislation to provide for periodic destruction of records.**

The Massachusetts Department of Education should be charged with the responsibility to suggest a destruction date for records which must be retained according to law. In addition, all records now retained should be reviewed and destruction dates recommended. Annual savings of $50,000 are possible.

6. **School committees should establish security procedures for handling, counting, and depositing cash.**

The handling of cash by school personnel is quite careless. In lunchrooms and elsewhere, it is frequently left unattended within view of passers-by. Frequently, the cash is counted by one person only. In some cases, one individual, frequently a woman, will transport cash to the bank without police or other protection. The Massachusetts Department of Education should examine all situations where cash is handled in school districts. Then, it should suggest procedures in accordance with sound business practices.

7. **The General Court should enact legislation permitting school districts to advance funds in anticipation of payment by state or federal authorities for approved projects.**

This permission should apply whether the advances are in anticipation of grants or reimbursement. At present, useful projects may be delayed or payment of salaries and other expenses deferred because school committees or town treasurers fear the original advance or repayment would be held technically illegal and that the community may, therefore, be liable for such disbursements. Reference is also made to recommendations within the Town/City-School Committee Relationship section of this report.

Facilities Planning and Acquisition System

The money spent annually for school facilities in Massachusetts is about equal to the total non-instructional expenditures by all school committees. However, each school district establishes an annual operating budget, but it builds a new school only once every five or six years. Thus, planning for the acquisition of a new facility should be on a longer-range basis than that required for the annual operating budget. The effectiveness of the planning and acquisition process varies greatly from community to community.

It is all too common to find existing facilities overcrowded because of delays in acquiring needed buildings. The reasons for these delays have been discussed in the Facilities section of Resources for Public School Education.

The entire process of facilities planning and acquisition should be improved. All districts would benefit greatly by having more assistance than can now be provided by the Department of Education. The following sections discuss the present system and recommended improvements.

Planning and Utilization

Conditions in Massachusetts' public schools range from severely overcrowded to comparatively extensive unused space accommodations. However, the latter are more the exception than the rule. On one hand, approximately 7% of the systems are now operating on double sessions for one or more grade levels or portions of separate grades. On the other hand, a few systems are not expected to reach their available pupil capacity for several years. Most districts that are at or very close to full space utilization expect to exceed their capacity in the immediate future. A major influence on space planning, now just beginning to create problems, is the phasing out of many parochial schools.

To avoid double sessions or overcrowding, some systems are using renovated, but otherwise undesirable areas. Others are contracting for outside space by renting locally or on a tuition-fee basis in an adjacent community. Also, certain districts are utilizing areas for other than their intended use or are operating staggered sessions by rescheduling classroom sessions. At least one system is experimenting with a year-round kindergarten program.

Many excellent examples of utilization have been afforded in recently constructed buildings. They include the flexibility of adjustable partitions, open-area teaching spaces, cafetoriums, multipurpose areas, and sharing of certain facilities in campus or house-type complexes.

Much of the work of classroom scheduling is being performed manually. However, computers are quite widely used in analyzing and promoting maximum use of facilities for secondary school programs.

Evening schools, usually for adult education, and summer school programs are on the rise. Last year, 184 school systems operated summer school programs. Enrollments were almost equally divided between the elementary and secondary grade levels.

Other uses of school facilities, outside of regularly scheduled school hours, by a community for civic meetings, club or fraternal organization functions, recreation, and the like vary from limited to extensive. By the same token, policies and regulations for such use range from virtually nonexistent to quite formal and complete. The question of space utilization, covering the topics touched upon, is one that actively occupies the efforts of most school administrators on a continuing basis.

EVALUATION

Changes in the character of educational programs and growth in pupil population appear to have the greatest impact on utilization of school facilities in Massachusetts. Most communities have endeavored to meet and supply appropriate facilities consistent with local school department programs and enrollment. Their efforts have, however, achieved varying degrees of success.

In many cases, there is a lack of sufficient long-range planning or appreciation of the results. As a consequence, numerous towns have inadequate facilities. Planning studies have often been made either locally or by outside agencies, but seldom has there been proper and periodic updating. Many communities do not have permanent school need committees. Such committees are established only when requirements become imminent and the community is suddenly confronted with a sizable building program to maintain its status quo. This has, in some cases, deferred desired additional education programs. In contrast, most systems observed showed excellent and effective short-range planning for the current year, as well as contemplated needs for the coming year.

The contrast between short- and long-range planning effectiveness may be explained in this manner. Many administrators have planned carefully and diligently in both phases. However, they are dealing in the short-range case with existing conditions over which they have virtually complete control, while in the long-range situation, they must also consider unpredictable public reactions over which they have no direct influence. Thus, a considerable amount of effort has gone into reports and brochures to keep the public informed. All too often, however, and more so in recent months, voters have chosen either to put off or drastically reduce needed building funds.

In the absence of sufficient factual data, it is difficult to make a precise evaluation of actual space utilization during regularly scheduled school hours. However, observations indicate that extremely conscientious efforts are made to make the best use of existing facilities. Additionally, there has been an awareness of such utilization in planning future facilities. The fact that some practices have been implemented by necessity rather than design does not modify the favorable assessment. The few systems that appeared to be less efficient at first have very recently added new spaces as the end result of timely and appropriate planning. These facilities will be fully utilized in the coming year by kindergarten or other classes.

The low level of facility use during evening hours and summer months is a situation unique to the

school system. Although many districts have various programs during these periods, they are usually confined to few of the available school buildings. This, in itself, is good practice insofar as needs of the particular programs are concerned. However, it has little bearing on utilization during the regularly scheduled school year.

RECOMMENDATIONS

1. **School committees should use proper long-range planning techniques.**

Increasing costs in all aspects of public education demands better long-range planning. The need for such planning is even more acute in those areas concerned with rapidly developing parochial school problems which are expected to become more critical in future years. Indeed, it has already become a short-term or emergency planning function in several school districts.

Goals should be defined as accurately as possible. However, they must be consistent with the individual community's ability to support such plans. The possibility of securing federal or state aid should not be overlooked. Increased involvement by the public in their school system by open disclosure of planning programs can be expected to achieve better overall results. Goals and planning should be coordinated with other community projects for public works, zoning, conservation, and the like.

A long-range revolving plan covering a 5 to 10 year period is recommended. Periodic reviews and updating are essential to keep abreast of controllable and uncontrollable factors which could influence desired or necessary changes in the school system. Updating should be done on an annual basis and during any period when a major development creates sufficient justification. A comprehensive review of actual and planned accomplishments, as well as those factors which may have a direct influence on one another, should be undertaken as often as practicable to maintain the integrity of the overall planning structure.

2. **The Department of Education should establish standard criteria and records for evaluation of space utilization.**

For purposes of evaluation and planning by individual systems, and for analysis and publication by the Department of Education, carefully considered criteria and formats for space utilization records should be designed and put into statewide use. Making optimum use of existing facilities is a vital prerequisite to determining whether new space is needed. Without continually updated information on room use and pupil loads in a form that facilitates continuing analysis, a school system cannot satisfactorily determine whether its facilities are being properly utilized. The same information, in projected form, will be needed to apply to planning of new facilities and help justify proposals submitted for local or state action. Through a uniform basis of comparison, systems would ultimately benefit by exchange of techniques used to accomplish better methods of space utilization.

A report entitled To Build or Not to Build is available without charge from the Educational Facilities Laboratories, Inc., 477 Madison Avenue, New York, N. Y. 10022. This corporation is a non-profit organization established by the Ford Foundation to help communities with their school construction problems. The report is a study of the utilization of instructional space in small liberal arts colleges. It contains a do-it-yourself work book for use by those institutions planning to survey their own utilization levels. The proposed criteria and records, in some cases, would be used to avoid the construction of unnecessary types of facilities. In other cases, they would be used to justify expenditures for new buildings.

3. **Local school administrations should make special purpose areas available for other activities.**

Areas such as cafeterias and auditoriums are often not fully utilized during off-peak periods. An example of effective utilization was observed in which a cafeteria could be divided to provide space for study or student lounge activities. The students were free to select the activity of their choice. Auditoriums, in particular, can usually be structured to accommodate additional instructional space or serve more than one school. The following reports are available without charge from Educational Facilities Laboratories, Inc.

- ► Divisible Auditoriums: Operable walls convert little-used auditoriums into multipurpose, highly utilized space for performing arts and instruction.
- ► The High School Auditorium: Six Designs for Renewal—Renovation of little-used auditoriums in old and middle-aged schools to accommodate contemporary educational, dramatic, and music programs.

Design and Construction

As of October 1969, there were 2,415 schools, encompassing a total of 3,188 buildings in approximately 400 school districts throughout the Commonwealth. The total replacement cost for these buildings is close to $3.8-billion. About 33% of the buildings and 24% of the instructional

classrooms used for schools were constructed prior to 1920. Thus, these buildings have been in use for over 50 years and are beyond the limits of most depreciation formulas in capital construction.

Replacement of these older buildings would cost approximately $700-million at an average construction rate of $30 per square foot. Annually, the Commonwealth is constructing approximately 1,200 rooms at a cost of well over $100-million. The trend is expected to continue for the next five years, at least. Enrollment in the public school system as of October 1969 in grades one to 12 was more than one-million students. There is an annual increase of approximately 3% per year.

In 1969, 38 school building projects were approved for construction at an expenditure of $115-million. State aid reimbursement to the cities and towns averaged around 45%, or over $50-million of the overall amount. Also, 19 other projects were approved but have not been acted upon. Construction cost recently has risen at an average rate of 10% annually. Indications are that this spiraling condition will continue.

The construction cost of individual buildings built in 1969 varied from $22 per square foot to $38 per square foot, not including architect fees, equipment, site, and the like. The many factors involved in the dollar spread are the basic design, framing methods, selection of materials, interior and exterior wall materials, lighting, floor covering, size, location, labor rates, and esthetics.

The average construction cost of new school buildings in Massachusetts in 1969 was approximately $30 per square foot. Over the past 10 years, the average has increased about $10 per square foot. This growth is in line with the rise in the general building construction cost index during this period. The construction bidding volume for new school buildings in 1969 amounted to $173-million, which is 28% of the bids on all buildings erected in Massachusetts.

Vocational schools ordinarily cost more than regular high schools. This is due to specialized building design, heavier construction, greater utility requirements, and specialized needs such as toolroom equipment, woodworking, sheetmetal, and automotive repair shops.

The average school project costs from $3-million to $7-million and takes two years to complete. Rising costs for construction mean additional borrowing and debt service charges. Currently, there is a backlog of construction needs for reducing overcrowding and, in some cases, eliminating double sessions, as well as replacement of older buildings, and the like. The new state requirement for kindergartens, and increasing parochial school transfers, will have a tremendous impact on strained budgets and programs.

EVALUATION

When a school district has need for additional classrooms and a building program, the superintendent and his staff are responsible for preparing the educational specifications for those facilities. It was found that administration departments in many school districts are understaffed, and job commitments do not allow necessary time for facility planning. In addition, there is a lack of knowledge in planning adequate facilities. There are several books, articles, and studies available and some state departments are willing to help in this area. However, many districts cannot, by themselves, develop a comprehensive proposal encompassing the detailed specification requirements.

Upon occasion, communities hire a consultant to conduct building feasibility studies. These involve all phases of current operations with investigation into alternatives such as additions to existing facilities, remodeling or rehabilitating older structures, or erecting portable or demountable buildings. Also included are new building arrangements, utilities, site development, parking space, roadways, walks, recreation facilities, financial requirements, and effect on local taxes. Recommendations are made with regard to the best alternative and an implementation plan is presented. These consulting services are relatively expensive, with the average project costing from $10,000 to $50,000. However, this professional approach assists school personnel to justify facility expenditures. In most cases, the recommended choice proves to be satisfactory and has resulted in cost savings and a better facility.

Districts with good facilities have spent the time, money, and effort to develop their long-range site and building programs. Preliminary meetings arranged with the School Business Assistance Bureau of the Department of Education, Department of Public Safety, and the Department of Health have prevented costly errors and delays. The combination of good preliminary planning, including cost comparisons of various building methods and equipment, and lack of delay has been of great value to the towns following this approach. By contrast, the experience of towns that have not carried out early cost-effectiveness studies, or have delayed the commitment to construction in the face of rising prices, has been costly. These towns could have avoided much grief by requiring the architect to perform com-

parative studies of various construction methods and types of mechanical and electrical utilities. They then could reach an early decision on their building program.

In the area of utilities, several school districts that built schools in the last three years have had difficulties with their mechanical or electrical equipment. The cause of trouble was traced to legislative action which amended Chapter 30, Section 39M of the General Laws in 1967. This amendment although doubtless of worthy intent, has in practice, introduced into several new schools some heating and other equipment of insufficient quality to perform adequately. In several cases, sections of schools had to be closed in mid-winter because temperatures in the classrooms could not be maintained at reasonable levels.

In a related area, the lighting levels in some new schools, although conforming to state requirements, were noted to be below the latest standards recommended by the Illuminating Engineering Society. Although this discrepancy is not major, the Task Force feels the state requirements should be upgraded.

State aid reimbursement for new school buildings has been approved under the General Laws, Chapter 645, relating to education. To obtain such aid for new construction, the school district must submit a complete proposal to the School Business Assistance Bureau. The bureau may approve or disapprove the program. Failure to comply with any of the bureau's recommendations denies the district state aid. Today, state aid averages 40% to 50% of the total project cost. Regardless of the projected cost per square foot, be it $20 or $50, state aid of up to 50% is available. This arrangement is not fair to the districts which cannot afford expensive schools.

As an alternative to the high cost of new construction, some communities have rehabilitated older buildings. If the building's exterior and framing is sound, there is no reason why this method should not be used; many years of life can be added depending upon the extent of reconstruction. As a rule, the cost should not be expected to exceed one-third of new construction costs. Few architects and building contractors favor this approach, because the monetary rewards are greater from new projects. A law, relative to financial assistance for reconstruction, rehabilitation, and modernization of school buildings, was approved under Chapter 754. The statute states this type of aid is limited to one-third of new construction expenditures made in the previous year. The various departments involved at the state level are not staffed to handle problems dealing with refurbishing old buildings. As a result, relatively little work has been done to date.

The Commonwealth is also faced with gradual phasing out of the parochial school system. This will have a great impact on local economies. The effects will be greater in communities where parochial schools have a high percentage of pupils. Today, there are approximately 700 parochial schools with an enrollment of nearly 500,000 students. Construction of facilities to accommodate this total, at an average cost of $2,000 per pupil, would require an investment of $1-billion. To rehabilitate existing parochial facilities to meet state standards will require a minimum of 60% of the cost of new construction or $600-million. No state aid is available for rehabilitation of these schools. Recently, two parochial schools were acquired by different towns; special legislation was required to allocate funds for those purchases. The Task Force found no evidence of a long-range plan to handle the parochial school problem. In addition, racially imbalanced school districts have required significant new construction. This problem has affected and will affect future planning and location of facilities in situations of disparity.

Population growth, overcrowded housing, ancient schools, and lack of available building space have plagued many cities for years. Shortsightedness in the past has led to many current-day problems. For instance, insufficient funds have been made available to those responsible for building upkeep and maintenance.

However, in many places a series of progressive ideas, programs and concepts have been developed and innovations brought on by limited space have been made. For example, in Boston a 10-story high-rise school building is in the process of construction. In another section of the city, a five-story parking garage was constructed with a school house on the top floor. In still another area, where a new elementary school lacked space, the building roof was redesigned and the playground installed on the roof.

Of the many plans and new concepts the one thought to have the most merit is the modular systems approach to school house construction developed in California, Toronto, and Florida. Copies of the California report, entitled SCSD: The Project and the Schools (1967) are available from Educational Research Laboratories, Inc., 477 Madison Avenue, New York, N. Y. 10022. The Toronto study, entitled SEF Report T-1, Introduction to the First SEF Building System (1968) has been published by the Metropolitan Toronto School Board, Toronto, Canada.

A prototype school using similar design will be built as a test facility. This will be followed by a full-scale building program. According to sponsors of the program, actual on-site construction time can be cut by almost 50% and total cost savings of as much as 25% can be achieved. This concept will bring about drastic changes to procurement methods and standards. To reap the fullest benefits, changes in the bidding laws will be required.

Throughout the state, undue emphasis on initial cost, rather than life-cycle cost, was noted. The National Council on Schoolhouse Construction in session at Milwaukee, October 1957, reaffirmed the principles of true economy in school construction as set forth in its bylaws and a publication entitled Thirteen Principles of Economy in School Plant Planning and Construction. The council took the position that isolated instances of apparent waste should not be used to imply that schoolhouse construction, in general, is not economical. Initial cost is not a measure of lifetime economy. Inexpensive/low quality construction, resulting in high maintenance costs and a short life, is wasteful.

The measure of wise investment in a school is determined by how well it serves the educational needs of the community. The building is only a small contributor to the entire process of education. If better methods, up-to-date design, prefabrication, or other ways can lower the cost, it is our responsibility to use them.

RECOMMENDATIONS

4. **The Department of Education should assist towns to develop and implement the modular systems concept for school building programs.**

More money is spent for building design and construction than on any other phase of the school building program. Because of new educational concepts, alternative methods of layout and design, and ever-increasing costs, this area has become most controversial. Present-day methods are outdated and cannot cope with the problem. It should be recognized that industry has been plagued with it for years.

The modular systems concept is one good answer and has been applied in some school systems initially in California and more recently in Toronto, Canada, and Florida. It has been successfully tested and proven. Much of the early development was sponsored by the Educational Facilities Laboratories of the Ford Foundation.

The modular systems concept reduces school costs by use of standard components which fit and operate compatibly as a system. These structural, ceiling, lighting, heating, ventilating, and partition components are designed to fit a common module or standard size. They can be mass-produced to minimize fabrication costs. The design-in compatibility reduces on-site assembly time and labor. The interchangeable nature of the components allows classrooms to be easily rearranged to meet new requirements. Because the system is based on standard components, rather than standard plans, the architect is given great flexibility in designing the school to meet particular needs imposed by the site or the educational requirements.

The City of Boston, after study, has adopted a similar approach which will be altered slightly to comply with local laws and building codes after a prototype building has established its utility. The Massachusetts Advisory Council on Education (MACE) has recently sponsored a study of school building costs conducted by the Boston architectural firm of Campbell, Oldrich, and Nulty which includes consideration of the modular systems approach on a state-wide basis.

This concept is not intended to eliminate the architect, but was developed to standardize materials systems. It is a tool which allows buildings to be assembled into many shapes and sizes similar to a simple mechanical toy set. Cost savings in construction can contribute badly needed funds for other areas of education.

Savings which approach 25% can be realized by the modular systems approach and field construction time can be cut by almost 50%. In 1969, 38 building projects were approved for construction at a total cost of $115-million. If a minimum saving of 10% is achieved by this method, annual dollar savings would be well over $10-million.

5. **Cities and towns should make early decisions relating to new building commitments.**

By having each town develop a workable and periodically-updated long-range plan, voters could reach a decision on each new school building about two years sooner than at present. This recommendation is considered in greater detail in the Facilities section of Resources for Public School Education.

6. **Cities and towns should require the architect selected for a new school building to evaluate proposed new school building design technologies and methods.**

A small number of school districts have people who are knowledgeable and talented in the areas of building design and construction. Most are less fortunate because they do not possess the personnel, money, or the ability to evaluate cost-saving

design methods and construction techniques. Therefore, the architect selected by each town should be required to make these evaluations until such time as the Department of Education can provide this service. The following typical areas should be evaluated for possible cost savings:

- ► Modular systems construction.
- ► Steel framing versus reinforced concrete systems. It is estimated that 10% savings can be realized through the proper selection of materials and design methods.
- ► Elimination of as many load-bearing walls where possible. Flexibility is gained, and costs are reduced by as much as $20 per linear foot of wall.
- ► Roofing can involve many methods and designs. Improper selection can cause future expensive maintenance problems.
- ► Floor covering comparisons should consider carpeting, various types of tiles, terrazzo, and seamless epoxy resin materials. The total life-cycle cost — initial plus maintenance — should be evaluated.
- ► Installation of air handling metal duct systems above ceilings in all new school buildings. This would serve the dual function of make-up air ventilation and future air conditioning. Installation during building construction is less costly than relocating service lines and removing ceilings at a later date.
- ► Combinations of exterior wall materials. The architectural nature of the material could vary the price from $25 to $200 per square foot. This is an area of significant cost-saving potential.
- ► Reduction of large expanses of windows, and provision of sun glare shielding in new and old buildings.
- ► Lighting systems, including the use of strip lighting fixtures installed above egg-crate ceiling panels. This is an economical approach to lighting and ceiling cost. It is also an effective method of providing even distribution of light throughout the area.
- ► T-bar suspended ceiling arrangements. This approach allows easy accessibility to service the equipment.
- ► Provision of adequate space for record storage, housekeeping and maintenance equipment and operations, including racks for supplies and materials.
- ► Design provisions for future building connections and expansion programs.
- ► Provision of access openings or entrances for large service equipment which may require replacement or removal at a future date.

Estimated minimum savings of 10% of building cost can be realized if proper cost studies are made in the areas listed. An evaluation of savings should be part of the required responsibilities of any architectural firm. This request should not cost the school system any additional fees. The annual school building construction cost throughout the state is about $100-million. Thus, a saving of about $10-million per year should be expected.

7. **Cities and towns should require the architect selected for a new school building to study alternate types of heating and ventilation systems prior to completion of the final design, and specify high-quality mechanical and electrical equipment.**

Each town or community considering a new school should require the architect to conduct economic studies of alternate heating and ventilation systems to determine those to be incorporated in the final design. The costs of operating manpower, capital outlay, and maintenance should be included in the study.

Operating experience for equipment in recently completed school projects should be reviewed prior to preparation of the final design. In addition, adequate provision should be made to provide access to all equipment for custodial and maintenance staff personnel. This can be provided by involving maintenance and operation personnel in the final design.

In certain recently completed school projects, some equipment has not been satisfactory. As a result, considerable time and extra costs in some cases, have been required for necessary modifications or replacements. These schools were equipped with inadequately designed heating and ventilation systems because minimum requirements of the Building Regulations for Schoolhouses had not been met. Therefore, specifications should be carefully written to provide high-quality mechanical and electrical systems.

Simplified systems and controls should be provided and critical services sectionalized for saving maintenance time and expense. Improperly sectionalized heating systems, power services, plumbing, and water lines result in costly outages, difficult maintenance, and inconvenience. Proper planning should be given to the routing of lines, placement of shutoff valves, drain facilities, electrical distribution, and the like. Prior to completion of the final design, consideration should be

given to providing for future addition of air conditioning equipment to the ventilation systems.

8. **The Department of Education should provide school districts with experience records of school architects.**

During the preliminary planning period for new school projects, information should be provided to the town by the School Building Assistance Bureau or the proposed Division of School Construction and Facilities which tabulates the experience records of school architects. These data should include a list of similar schools designed by the architect, the location, date of construction, and the major features as well as the estimated and actual cost per square foot of the buildings. Inspection of similar facilities, during the preliminary planning period, should also benefit the school districts.

Most of the recently constructed schools have been designed by competent architects and, in general, good performance has resulted. However, in a few cases, new schools have been designed by architects with little or no experience on school projects. Such schools have required costly construction changes to overcome some unsatisfactory design features.

9. **The Department of Education should create a Division of School Construction and Facilities to provide data and technical assistance on school design and construction, including information on cost-saving approaches, as well as perform the existing functions of the School Building Assistance Bureau.**

The need for a central source of assistance to the local communities has been made clear in preceding discussions. The work load activity in the school construction field is sufficient to require a separate division. The proposed division should provide assistance in the areas of financial aid, educational specifications, legal functions, data bank, cost estimating and analysis, site planning, building design, and architectural planning.

Implementation of this recommendation is discussed in greater detail in the Facilities section of Resources for Public School Education.

10. **The Department of Education should develop procedure manuals for educational specifications, building design and construction, site selection, site development, and financial assistance.**

The majority of school representatives have stressed a need for such reference manuals. They would be a tremendous asset and a source of knowledge to the school districts as well as to any group of building planners. The readily available information they could provide would save time and money on the part of the school districts. The manuals should be based on detailed statistical data, studies of alternatives, method studies, reports, and recommendations from individual school districts.

The proposed Division of School Construction and Facilities should generate these manuals. Until such time as this division is activated, the School Building Assistance Bureau should develop the manuals for educational specifications, site selection, and financial assistance.

11. **The Department of Education should immediately implement the provision for state financial aid to rehabilitate and modernize older schools.**

Considerable rehabilitation and modernization of older school buildings has been accomplished in school districts, particularly in larger cities during the past several years. In view of the current high cost of building construction, this program has resulted in appreciable savings when compared with costs of equivalent new school buildings. An investment of a few hundred thousand dollars has, in some cases, extended the life of a sound building by 10 to 20 years.

Recently, state legislation has been passed to make state funding available for rehabilitation and modernization of older school buildings. In order to implement this aid, specific regulations for funding eligibility should be compiled by the School Building Assistance Bureau or the proposed Division of School Construction and Facilities. These should be made available to all school districts. The regulations should be coordinated with the Building Regulations for Schoolhouses. Qualified personnel should be made available for the School Building Assistance Bureau to implement state financial aid for a program of rehabilitation and modernization.

When this has been accomplished, many school districts could take advantage of the program. Appreciable savings would result when compared to the cost of new school buildings.

The City of San Francisco recently completed a study for modernization of older school buildings. This report indicated that savings of up to approximately 55% can be made, when compared to the cost of equivalent new buildings. Some of the larger school districts in Massachusetts have completed modernization programs of older school buildings at savings up to about 75%.

Present legislation allows one-third of the total annual allocation of about $45-million appropriated for state aid to school construction to be used for rehabilitation and modernization. This amounts to about $15-million annually. Assuming this

state aid to cover, on the average, 50% of the total cost, the amount spent for renovation would be $30-million. By the rule of thumb cited previously, equivalent new construction would cost $90-million. The apparent total savings of $60-million would not be fully realized because the lifetime of the renovated schools would be less than the life expected of new schools. However, it seems reasonable to estimate that half of this, or $30-million, would be saved if the maximum amount of state aid were granted.

12. The General Court should establish a limitation on state financial aid for school construction projects.

State financial aid is provided by a formula based on the approved total cost of construction of each school project. However, no limitation has been established on the building construction cost per square foot. Therefore, a community electing to build an elaborate school, with features that raise the per-square-foot cost above the level to acquire a sound and serviceable facility, is entitled to receive the same percentage of state aid as one that cannot afford luxuries. Equity could be reached by setting a ceiling on per-square-foot cost above which the state-aid formula would not be applied. Thus, all towns would be reimbursed equitably, and those communities desiring to construct more lavish facilities would still be at liberty to do so.

The ceiling for application of the state aid formula should, probably, be multivalued depending on the type of school project for which aid is requested; that is, elementary school, high school, and the like. Additionally, the ceilings should be revised each year to conform with any increase or decrease in the cost of building construction. This may be accomplished by applying the building construction cost index as published in the quarterly roundup issue of Engineering News-Record. The Building Cost Index for Boston should be used to compare the average of quarterly cost indices of the current year with those of the previous year. The percentage change would be applied to the limitation used for the previous year to establish the ceiling applicable for the current year. Thus, establishment of a basic limitation for state financial aid would result in preventing excessive costs of construction of future school building projects.

13. The Department of Public Safety should upgrade minimum school building lighting standards to conform with the latest Illuminating Engineering Society recommended levels.

The minimum lighting levels, as indicated in the Department of Public Safety Regulations for Schoolhouse Construction, fall far below the accepted minimums recommended by the Illuminating Engineering Society (IES).

The following comparison, measured in foot candles, between the Department of Public Safety Regulations and the IES Lighting Handbook illustrates the differences:

Area	Department of Public Safety	IES
Classrooms		
Normal classrooms, study halls, libraries	30	70
Manual arts, and drafting	50	100
Sewing rooms, sight-saving classes, laboratory benches, and so forth	50	150
Corridors and stairways	10	20
Auditoriums	10	30
Gymnasiums		
General	20	30
Exhibitions and games	20	50
Cafeterias	20	50

Lighting levels should meet today's standards. This should hold true especially in classrooms, libraries, and study hall areas. The IES and lighting equipment manufacturers have proven beyond a question that improper layouts and low-level lighting outputs cause eye strain and adversely affect a person's effectiveness and productivity.

The Illuminating Engineering Society Handbook is now being revised and many of the recommended lighting levels will increase. Copies of the handbook can be obtained from the IES, 345 East 47 Street, New York, N. Y. 10017.

14. The General Court should enact legislation permitting towns to use the credit rating of the Commonwealth to reduce bond interest costs.

Most of the towns in Massachusetts have lower credit ratings than the state itself. Thus, they pay a higher interest rate on their bond issues. The use of the state's credit rating would reduce these interest charges. This recommendation is discussed in more depth in the Facilities section of Resources for Public School Education.

15. The General Court should amend the law to permit the use of a base bid and alternate specifications.

The existing law, Chapter 30, Section 39M, which deals with buying of mechanical equipment, for example, heating systems, has been in effect for approximately three years. During this period, serious deficiencies in the law have become manifest. Basically, the effect of the law has placed the buying decision in the hands of mechanical contractors, rather than with the school districts as was formerly the case. As a consequence, a number of schools have been built with equip-

ment which, although it met the basic intent of the specifications, as written in the law, was in fact not of a quality high enough to meet the need. In some cases, substitutions have been made by contractors against desires of school building committees, architects, and engineers responsible for the school design.

There is a provision in this law which allows a school district to limit specifications to one manufacturer. However, the procedure is cumbersome and requires that a motion listing the reasons be adopted by the school building committee and recorded in the minutes of the meeting. As a result, school committees are reluctant to do this because competition is eliminated.

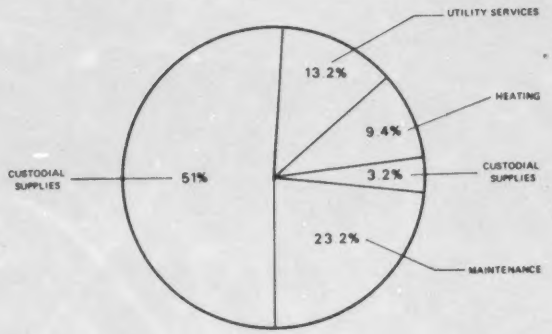
A base bid and alternate specification which would allow the building committee to specify one manufacturer and take alternate prices for other manufacturers is now illegal under this law. The previous law included a procedure for base bids and alternatives which did create competition. Where differences in price existed, it allowed the owner to decide whether the high-priced item was worth the expenditure. Because this law has had effects inimical to construction of sound quality schools, it should be changed.

Facilities Operation and Maintenance System

Cities and towns in Massachusetts have a very large capital investment in school buildings and facilities. Currently, this investment represents approximately $3.8-billion in replacement value. It is being added to each year by over $100-million. The useful life of these buildings will depend to a large extent on proper custodial care and wisely-administered preventive maintenance programs. The largest part of the noninstructional school committee budget is spent on operation and maintenance. For this reason, we have recommended in the section entitled Manpower that this subject be a specific responsibility of the proposed Bureau of School Management Services.

For the year 1968-69, total expenditures for operation and maintenance by school committees amounted to $83-million. The largest portion of this amount, 51%, was expended for custodial services as depicted in the pie-chart as shown below. In addition to the above amount, about $7.5-million was spent by certain cities and towns for operation and maintenance.

DISTRIBUTION OF SCHOOL COMMITTEE EXPENDITURES FOR OPERATION AND MAINTENANCE YEAR ENDING JUNE 30, 1969



Operations

School building operation embraces many diverse functions. It includes provisions for keeping buildings clean at all times, lighting them properly, and maintaining the rooms at the proper temperature. In addition, it entails clearing ice and snow from walkways during winter months, mowing the grounds when necessary, and other tasks to provide the best environment for teachers and students. Operation is distinguished from maintenance, which includes repair of buildings and equipment.

There are over 3,000 school buildings in the Commonwealth with a total floor area of approximately 133-million square feet. They are cared for by 6,200 custodians at a cost of about $50-million.

All of the school districts visited had their custodial services performed by either the school department or town department personnel as opposed to having it contracted to outside firms. A sampling of medium and large school districts, depicted in the table directly below, showed the following:

School District	Cost per square foot, per year
A	$0.48
B	0.41
C	0.45
D	0.34
E	0.60
F	0.42
G	0.39
H	0.43
I	0.48
Weighted Average	$0.42

As indicated, the weighted average cost in this sampling was $0.42 per square foot, per year. This compares favorably with the national average for contract cleaning of $0.57 per square foot.

EVALUATION

From the point of view of custodial care, the general appearance of school buildings covered in this study was favorable. Even older wooden structures were clean and well kept although the facilities showed signs of wear. In a couple of school buildings, the students were careless in throwing candy wrappers and papers on the floor. This was creating unnecessary custodial work.

The operation and maintenance of school buildings was the responsibility of a town or city department in a few school districts. This arrangement should be discouraged, because by placing responsibility for performing the necessary custodial and maintenance duties outside the school district, a less-than-satisfactory operation results.

There are practical advantages for performing in-house school custodial work. During the day, a custodian has many responsibilities besides his janitorial tasks. If cleaning operations were contracted, they would normally be done after school hours. Therefore, somebody would have to be assigned for duty during the day. Furthermore, if this day service was contracted, the work might not be done as satisfactorily when compared to that of a person on the school payroll. In addition, it would tend to further increase contract charges.

In the larger school districts, there is usually a supervisor who has the responsibility of directing the work of the custodians. Frequently, these supervisors are former custodians who lack technical understanding of modern heating and control systems, air handling systems, and the like. On the other hand, a few of the new business managers, who are responsible for the operation and maintenance function, have some technical background. This should prove very helpful in carrying out their supervisory responsibilities.

A number of custodian supervisors belong to associations which deal with custodial activities and from which they derive good information. These groups include the New England Head Janitors Association, the Institute of Sanitation Management, and the American Association of School Building Officials. Additionally, a number of magazines dealing with building operations are available. One such magazine frequently noted was National Custodian. Increased involvement in the associations noted would be helpful to all school districts. However, membership fees and travel expenses are usually severely cut in school committee budget reviews.

From the standpoint of efficient operation, it would be advantageous if each school district had a supervisor of operation and maintenance who had technical background in the areas of building and equipment care. This, of course, can only be accomplished in districts large enough to justify such supervision. In districts where this type of supervision is not possible, the head custodians should, at least, be provided with a custodian's handbook.

Some districts have developed their own custodial manual while others have adopted a standard publication. The scarcity of manuals among custodians and their supervisors indicates that new custodians do not have the benefit of basic fundamentals of their job. The lack of a manual also deprives the supervisor or custodian of valuable information when problems or questions arise.

Training newly hired custodians is generally accomplished by placing them with an experienced senior custodian. This works well unless that employee is not up-to-date on new techniques or producing up to his capacity.

In one large school district, a study of housekeeping programs was made by a consulting firm to recommend the optimum plan for supervising and staffing as well as the best operating methods, equipment, and materials. Another large school district has an in-house training program for all new custodians. This is a very complete course with classroom work and provides instruction in the proper use of custodial equipment and supplies. Work schedules for custodians are carefully developed based on the time required to perform various duties. The supervisor of custodians holds regular seminars with his area supervisors to discuss current problems so they can take back to their custodians new and timely information. These districts, however, are exceptions. In general, the approach to training is inconsistent and improvement could be realized by a well-organized system.

RECOMMENDATIONS

1. **The Department of Education should reactivate custodial training programs conducted by the Division of Occupational Education at regional vocational high schools and other locations.**

The proper training of a new custodian to provide him with knowledge and skills to perform his duties efficiently is very important. Today, there are many different kinds of chemicals, synthetic detergents, waxes, sealers, polishes, power-driven floor washing machines, and polishing equipment. The understanding of these products to attain the most efficient and effective use by custodians must be acquired. An untrained employee cannot be as effective on his job as one who has been schooled in basic fundamentals of his work.

There are over 6,200 custodians in the public school districts of Massachusetts. Because of retirements and persons leaving their jobs, a substantial number of new custodians has been hired each year. To provide the best foundation for the new man, the school district superintendents should take advantage of a custodial training course that is available through the Division of Occupational Education of the Massachusetts Department of Education. This division is ready to provide a basic course for custodians at any of the regional vocational high schools and other locations throughout the state. These courses can be scheduled during the day or evening to fit the needs of the various school districts.

There are other custodial training programs available. For example, the Custodial Training Foundation of Algonquin, Illinois has a new national workshop program. It is a traveling workshop and teaches the rudiments of housekeeping and building maintenance. Attendance at their one- or two-day courses can be arranged through affiliates of the Foundation in most large cities. Also, the Bureau of Adult Education and Extension Service of the Department of Education provides a 10-assignment correspondence course to prepare applicants for the Junior Building Custodians' Examination under Massachusetts' civil service regulations.

2. School administrations should improve on-the-job training for new custodians.

Every new custodian should be placed with a head custodian or someone who has had proper training and is adept at instructing others. Hopefully, the new employee participated in a training course for custodians before being hired. If not, he should be asked to enroll shortly thereafter. Additionally, he should have a custodian's handbook to study work methods during his training period. This could be loaned to him by the school district. It is important the new recruit learns the right way to do his job so he does not develop bad habits which have to be broken later.

Several large school districts have well-organized in-service training programs for custodians. These include orientation and general instruction through classroom work and instruction in proper work procedures under the supervision of an experienced custodian.

The results of a good training program are as important in a small district as in a large one. Therefore, new recruits should be given a custodial training course if possible. It is hoped the demand for such a course will be sufficient to justify the Division of Occupational Education in conducting courses for custodians at regional vocational schools throughout the state.

3. School committees should procure a handbook for all custodial personnel.

In most school districts, a newly hired custodian is placed under the direction of a head custodian who has had years of experience in his job. The quality of training is determined by the ability of the head custodian to convey the techniques of the job. This type of on-the-job training of new personnel is often excellent but frequently leaves something to be desired.

If the new employee, as well as his instructor, derived the benefits of a custodian's handbook in the training process, the important reasons for doing the job in a certain manner would not be overlooked. Also, the proper tools and equipment used for a particular job as well as the best detergent, chemical, sealer, or wax would be explained. The new custodian could continually refer to the handbook as he becomes familiar with his job. Additionally, his work schedule could be developed by using units of time to perform specific tasks as outlined in the handbook. Reference material in the handbook could also be beneficial to the older custodians who may not be familiar with some of the newer techniques or work-scheduling procedures. There are many handbooks on this subject, and several are listed in the bibliography. Implementation will require a one-time outlay of approximately $12,000.

4. School administrations should improve the quality of custodial supervision.

Closer supervision of custodians in each school will result in better planning of the work schedules and correction of poor work habits at an early stage. It will also hasten introduction of new or improved methods for doing the job better and easier.

The supervisor of custodians should be as well informed about custodial duties as the custodian himself. He should also be knowledgeable about the mechanical, electrical, and communication systems of the schools under his supervision to provide intelligent direction. In addition, he should keep up-to-date on new developments in the fields of operation and maintenance to be alert and responsive to them.

The supervisor of custodians should make periodic inspections with the head custodian of each building to ensure the required level of cleanliness is being maintained. He should also discuss any problems the head custodian may have to determine ways of improving the operation. If the supervisor is not thoroughly familiar with all aspects of his job, he should participate in the custodial training program available from the Division of Occupational Education.

5. **School administrations should institute schedules for custodians using work-measurement techniques.**

Efficient custodial personnel are an asset to any organization. They will perform their assigned tasks with ease and without wasted effort. The development of a custodian's work schedule based on past practices or actual time taken is not effective. However, work schedules developed by up-to-date time standards for performing various functions make it possible to provide uniform schedules for all custodians and establish fair distribution of the workload among employees. Also, it sets the standard of performance for new custodians.

Standard time elements for performing specific duties have been developed by industrial engineering studies and are proven in practice. The Handbook for School Custodians by Alanson D. Brainard, University of Nebraska Press, is an excellent reference for standard time information. It also sets standards of productivity for second shift custodians, who are generally less supervised.

6. **School administrations should install a suggestion system for custodians and maintenance personnel.**

Suggestion systems stimulate employees to recommend operational changes or improvements that would save money. Custodians and maintenance people should be able to spot weaknesses in building designs and layouts that would cause unnecessary work in performance of their duties. They are also in a position to develop ways of doing their job to save on labor or produce better results. Frequently, good ideas are not offered by employees because there is no incentive. If their ideas could be presented to the superintendent or school committee with the assurance of receiving consideration, more good recommendations will be advanced and adopted.

Usually, a certificate and a small monetary reward would result from acceptance of a suggestion. Experience shows the cost of such a program would be overshadowed by resulting savings.

7. **The Division of School Construction and Facilities as proposed in the section of Resources for Public School Education, should act as consultants to school districts on building construction to reduce operating and maintenance costs.**

At present, there is no central point where school district superintendents or building committees can obtain reliable and up-to-date information on current practices in building layouts and materials that will reduce operating and maintenance costs. Much time and effort is spent by separate building committees to study the best type of floor for a particular area, composition of walls and wall covering, size and location of closets for custodians, and many other labor-saving features.

In many cases, these comparative studies are duplicated in several school districts. Therefore, an appropriate group should have responsibility for providing information on all aspects of school building construction. This group could serve as consultants to all school districts in recommending the most desirable material or equipment to be used under certain conditions. It would keep abreast of new developments and informed on the results of their recommendations. Implementation would provide a central location where reliable unbiased information could be obtained. In addition, it would reduce duplication of effort, speed up the decision-making process, and help to get the job finished sooner.

Consulting firms could be employed to make impartial studies of the application of various materials in school building construction. For example, a long-range economic study could be made of the best type of floors for corridors, classrooms, cafeterias, kitchens, libraries, gymnasiums, and the like. A more expensive floor might easily be justified if cleaning and care of its surface is materially reduced.

A typical study of this type, The Economics of Carpeting and Resilient Flooring—An Evaluation and Comparison, was prepared by the Industrial Research Unit, Wharton School of Finance and Commerce, University of Pennsylvania, Philadelphia, Pa. 19104. Copies of the report may be secured from this address.

Another area to study would be a new technique for care of vinyl asbestos flooring in commercial installations. This new no-wax maintenance method, which shows promise to lower floor maintenance costs by 50%, was suggested by the Asphalt and Vinyl Asbestos Tile Institute. It would eliminate the waxing and stripping operation now considered necessary. One company has used this method in an office building since 1956 with apparent success.

Implementation costs of $75,000 per year to hire management consultants will be more than offset by potential annual savings of $1-million. These figures are included in the discussion on Facilities in the section entitled Resources for Public School Education.

8. **School building committees should involve maintenance and custodial personnel in the design and planning of new facilities.**

The primary concern in the design features of a new school facility is the adequacy of educational

specifications. All too often, however, maintenance and custodial requirements are given little, if any, attention. As a result, poor layouts are developed from the operational viewpoint, thus increasing the total life-cycle costs of the buildings. Typical examples include:

- Inadequate storage areas which prohibit savings related to volume or off-season purchases.
- Poorly located custodial rooms which require additional walking time when cleaning the building.
- Remotely located receiving docks which involve extra handling costs.
- Low cost materials (for floors, walls, and the like) which increase annual cleaning costs.
- Poorly located electrical outlets which make their use impractical.
- Non-standardized hardware which requires an excessive inventory of replacement parts.
- Buried water and steam lines under the floor which make repairs costly.
- Sinks instead of floor drains which require raising mop buckets.

No single school building contained all of the above faults. However, these examples represent an area of consideration which is, too often, ignored. Custodial and maintenance personnel are most knowledgeable in this regard. With their help and involvement, future operating costs of a new building can be reduced.

9. School administrations should involve the pupils in the care of their school building.

Pupils can be of help to teachers and custodians in keeping their school building neat and clean. One example is the system of having the pupils deposit their luncheon utensils, dishes, and trays in the designated location when leaving the cafeteria. In some schools, the last group of students to leave the cafeteria place their chairs upon the tables to assist the custodian in cleaning up after lunch. Such practices should be encouraged.

There are probably many other ways in which pupils assist teachers and custodians in the performance of their duties. If this activity could be intensified by assigning responsibility for small duties to the pupils, their sense of involvement and pride in the school environment would be increased. To be most effective, such involvement should concentrate on pupils who are least concerned with appearance of their school. This would be beneficial from the point of view of releasing the custodian's time for more important duties. In addition, it would create an atmosphere of respect for property. Definite action on the part of school personnel to involve students is timely because of the general concern for a clean environment and conservation of our natural beauty.

Maintenance

Maintenance of school property can be defined as "fix-it" type jobs performed in the buildings as opposed to "clean-up" functions which are normally classified as custodial work. Maintenance procedures include functions such as electrical repair; boiler upkeep; care of the grounds; equipment repair; as well as facilities improvement involving painting, plastering, carpentry, plumbing, and other craftsmen skills.

There is no typical maintenance organization in the Commonwealth since laws, customs, and requirements vary extensively from community to community. For example, in some urban communities, school buildings are maintained by a city maintenance staff (usually part of a Department of Public Works). The school department, in these localities, has very little control over the scheduling or costs of required projects. In smaller towns, however, basic similarities do exist.

In the 1968-69 school year, close to $19-million was spent for the maintenance of school facilities. Of that amount, approximately $5-million was expended for salaries. The remaining $14-million was for contracted services, supplies, and other expenses. In addition, maintenance services provided by other municipal agencies totaled approximately $7-million.

Quite often, the maintenance staff and maintenance programs are directly supervised by the superintendent or an assistant superintendent who has an educational background. In other cases, responsibilities are delegated to an individual typically titled director of buildings and grounds, head custodian, or the like. If the school system has a business manager, he may have the administrative responsibilities.

Depending on the town's size, the maintenance staff usually comprises two to five men who normally travel from building to building as the needs arise. Their capabilities vary and the work they perform depends on the skills they possess and the size of the job. If they feel that they cannot do the job, it is normally contracted with a local craftsman or contractor. With many functions, the principle element of cost is labor. Therefore, anything which can be done either to save labor or make it more efficient should be considered.

EVALUATION

The maintenance function is performed in all communities. However, its quality and degree of effectiveness varies. Furthermore, maintenance of school facilities has, over the years, taken a back seat to other school department expenditures. The attitude of those involved seems to have been that limited corrective maintenance was sufficient. Little thought was given to the future when major corrective measures would have to be taken. In many communities, this attitude continues to prevail and is nurtured by the increasing costs of materials, labor, and contracted services. Additionally, taxpayer concern is quite often about the curriculum, not the environment in which the curriculum is presented.

There are several basic reasons for the absence of quality maintenance in the school systems. In some instances, it is quite simple. The city or town has not given the school department authority to maintain its buildings. Therefore, the school department could not improve maintenance activities. A second reason is that in many communities, the school administrator who is responsible for the maintenance function has only limited experience in this area. Because he is an educator, most of his efforts are devoted to education, the area he knows best. Consequently, the quality of the buildings is decreasing and costs of repairs are increasing.

A third reason is the absence of any preventive maintenance plan. A properly coordinated program would tend to reduce the more costly repair projects by implementing a preventive plan involving relatively small annual maintenance expense.

RECOMMENDATIONS

10. The General Court should amend the law to authorize school committees in all towns and cities to maintain their respective school buildings.

Several cities have specific departments which are responsible for the maintenance of all municipal buildings. In most cases, this is not the most efficient method. Given the amount of money these cities indicate they spend on school facilities, the school departments could greatly improve the quality of the educational environment.

In one city, the school buildings were old and in a serious state of disrepair. The city's public works department claimed to have spent several hundreds of thousands of dollars on school maintenance. However, there was little evidence of this expenditure. Where something was done, the symptom, not the cause of the problem was addressed. For example, a missing downspout allowed water to seep through the masonry and cause considerable spoilage, chipping, and peeling of plaster and paint. After repeated calls for assistance, maintenance personnel came and repaired the interior wall. Shortly thereafter, the same wall required more attention. This situation should have been more wisely managed.

If the school department is responsible for education of the children, it should also have the responsibility for the teaching environment. When the schools are given this responsibility, they would be in a position to efficiently coordinate priorities of a sound educational program with those of a carefully considered maintenance plan. Having a separate maintenance staff within the school department would allow for expansion of the staff's knowledge of building systems. Additionally, it would instill a sense of pride by being responsible for a specific group of buildings, facilitate coordination of maintenance jobs with the custodial staff, and promote a higher degree of efficiency and output. A 2% increase in efficiency would produce annual savings of $140,000 out of the $7-million expended by cities and towns in the Commonwealth.

11. School committees should limit assignment of maintenance planning and administration responsibilities to qualified employees.

For the most part, the persons who administer maintenance programs are educators. Although they appear to be exerting a very sincere effort, they have not been sufficiently exposed to or properly trained in techniques of maintenance management to make their efforts most effective. There are several ways in which this problem could be solved. Either of the two following methods could be adapted to meet local needs.

First, a person with experience in maintenance functions could be hired to fill a newly created position. In smaller towns, this solution is not economically defensible if maintenance administration is the sole responsibility. However, such a position could possibly be justified if it were to include other nonacademic responsibilities such as transportation, purchasing, financial planning, and the like.

A second means would be to encourage the present administrators to participate in and/or subscribe to various seminars, publications, or professional groups to learn and observe the techniques and ideas of sound, economical maintenance management methods. Maintenance managers should be encouraged to broaden their experience and knowledge in the same manner

that teachers are required to continue with their educational credits.

12. School administrations should develop and implement maintenance management systems which include sound principles of preventive maintenance.

Such management systems should be complete entities. They would start with a thorough inventory or inspection of the facilities to be followed by a review of the estimating and scheduling functions. Further, the programs should be continued to the point where they provide good reporting systems so the process may be perpetuated and improved upon. There are many systems in use today. For example, the U. S. Navy's Maintenance Management Manual is an excellent reference guide.

The purposes and goals of a sound system are to:

- ► Protect the investment in the facilities.
- ► Prolong the useful life of the building.
- ► Promote health and safety.
- ► Give the teachers and students the best possible environment.

To achieve these goals, administrators, school committee members, and taxpayers should be conscious of the following:

- ► The quality of the maintenance program affects the educational program.
- ► The maintenance function is as important as any other function.
- ► The persons responsible must take pride in their work.
- ► Service to users of the facilities is of prime importance.
- ► Savings of tax dollars can be realized by planning and cost analysis.

The proposed Bureau of School Management Service in the Department of Education should offer assistance in this regard. In 1968-69, approximately $5-million was spent by the schools for maintenance labor. If efficiency could be increased from an estimated current level of 30% to 35%, labor saving of approximately $400,000 could be realized.

13. School administrations should analyze contracted services to determine if employment of full-time craftsmen is justified.

It is not unusual to find a maintenance staff composed primarily of men with one common skill such as carpentry. Thus, the primary function of these craftsmen would be to modify and renovate existing facilities to create more classroom space in overcrowded buildings. This is, no doubt, a sound economic alternative versus contracting for the work. However, the remaining maintenance jobs are typically contracted out since neither the skills nor the manpower are available.

One must remember that the primary cost element of a maintenance job is labor. When a job is contracted, charges include travel, set-up time, and time to get acquainted with the particular system being repaired. In addition, the contractor also includes a profit in the labor rate as well as on the materials. All of these extra costs could be avoided if maintenance operations were performed by school personnel.

A comprehensive review of all contracted services could quickly tell where savings could be realized and determine if positions such as electrician, plumber, mason, and the like are economically justified. It might also be found that more than one such craftsman is required. This could develop into an additional benefit of flexibility between a sound preventive maintenance program and the necessary nonrecurring repairs. A 10% profit for contracted services plus a 5% increase in efficiency will produce savings of about $1-million out of the $7-million expended annually.

14. School committees should develop cooperative maintenance arrangements between cities and towns.

The conclusions reached in analyzing contracted services could be that additional staffing is not justified. However, the joint requirements of two or more towns could justify a cooperative maintenance staff. Arrangements of this nature should be explored and encouraged and a workable plan developed and placed in operation.

15. School administrations should encourage custodians to perform several minor maintenance functions.

It is not unusual to find, particularly in city school systems, that job descriptions for custodians are so rigid they will not touch any tools because it is "not their job". Such working arrangements are costly. Therefore, custodians should be encouraged to make minor repairs and adjustments to doors, windows, furniture, and the like. They are normally among the first to notice such faults and their efforts would avoid more costly future repairs and wasted time. Savings are based upon custodians spending one-half day per month in each school building in the Commonwealth to perform minor maintenance tasks. At $4 per hour for skilled craftsmen, this avoids $600,000 in labor costs each year.

Transportation System

Transportation of school children is a large and growing operation in the Commonwealth. The need for pupil transportation has grown steadily with movement of people to the suburbs and the country, location and building of school systems at greater distances from populated areas, lack of safe walking provisions on many roads, and necessity to conserve travel time. In fact, there is evidence of a growing trend towards bussing all children regardless of the distance they reside from school.

In 1969, about 500,000 pupils, or 35%, were transported from home to public and private schools out of a total student population of more than 1.38-million. The cost of transportation was over $27-million, representing 2.9% of the total expenditures for education. It involved 4,437 busses as well as 848 smaller vehicles which traveled a distance of about 34.4-million miles. Providing for special education, athletic teams, field trips, and special events added substantially to the overall costs of transportation requirements. Laws requiring the transportation of nonpublic school children have also added to the growth and costs. In 1969, 9.1% of the students transported were nonpublic school pupils. Transportation charges have been rising at an annual rate of approximately 11% since 1960. These increasing costs stress the necessity for operation of school district transportation systems in the most efficient and economical manner possible, consistent with safety.

Presently, each school district is responsible for transportation of its pupils. It establishes policy under which transportation is provided within minimum standards defined by law. This results in a number of different approaches. Most commonly, districts contract for pupil transportation with private operators for a three-year period; the maximum contract period permitted by state law. Others purchase or lease transportation equipment and operate their own fleets. Some districts, usually in metropolitan areas, contract with local municipal transit systems for service. Currently, one district has separate contracts with over 24 owner-operators of school busses.

Administration of the transportation systems is the responsibility of school committees and school superintendents. In small districts, the superintendent may personally administer operations. However, in larger districts, the task is usually delegated to a business manager, assistant superintendent, or staff assistant. Many of the personnel who administer transportation systems do not possess experience or training for this responsibility. Primarily, they are educators who have been assigned the task as an additional duty. Unfortunately, this requires a significant portion of their available time.

EVALUATION

There is little transportation expertise available at the state level to help the school system administrators. An exception is the work performed by the Bureau of Research and Field Services in preparing a manual of transportation guidelines and assisting various districts solve their operational problems.

To avoid operational and driver recruitment problems, most districts contract for transportation service rather than purchase and operate their own systems. In most cases, the cost of contracted service is higher than the expense of operating an efficient school district-owned fleet. Contractors must pay federal as well as state taxes on equipment and supplies purchased and operate at a profit. This is not the case with school fleets.

Bidding for transportation service is not usually competitive. Rarely is there more than one bidder, even though three bids are required. In many cases, several operators divide up a district by agreement.

There is need for state assistance in the purchase of school buses, equipment, and supplies. The Commonwealth should provide minimum specifications as well as establish state bid prices and make them available to the school districts. The price paid for busses of equal capacity and specifications varies greatly from district to district. This is also true of the prices paid for supplies and parts.

School districts are reimbursed by the state for a portion of the cost of transportation operations. However, the reimbursement formula, as presently written, provides no incentive for school districts to economize since they are reimbursed for all costs above a fixed base.

There are approximately 400 school districts in the Commonwealth which are individually operated by school committees, and superintendents. These vary from small operations of one bus to very large operations using over 50 vehicles.

The magnitude of the complex and fragmented pupil transportation problem, which is administered by personnel who are not necessarily trained for the responsibility, results in an inefficient and uneconomical noneducational operation. This ab-

sorbs an excess amount of educational dollars. Therefore, a method should be devised for combining the district transportation systems into larger, more manageable units which would be directed by experienced personnel. Additionally, assistance from the state level must be developed if the Commonwealth is to have efficient low cost transportation. The school district administrators should be relieved of this time-consuming and burdensome function. Recommendations for strengthening the Department of Education are included in the section on Resources for Public School Education.

A system is defined as an arrangement of related or connected functions to form a unity or organic whole such as a group of transportation lines under a common management. Pupil transportation in the Commonwealth does not possess unity because the individual school districts must, according to law, provide service in their area. They do so by various means. In many instances, this results in higher costs than would be the case if transportation were provided under an efficient system utilizing expert administrators at the state and area level. A chart which depicts the proposed pupil transportation organizational relationships is illustrated to the right on the following page.

RECOMMENDATIONS

1. **The proposed Bureau of School Management Services should provide expert and timely guidance to enable local districts to implement an effective and economical transportation system.**

As stated in the section on Resources for Public School Education, the establishment of a group of experts on transportation within the Department of Education is necessary to provide efficient management of pupil transportation systems in the Commonwealth.

2. **School committees should establish cooperative arrangements where transportation is required for special purposes such as vocational and/or technical schools, and the like.**

Individual school districts which supply transportation for pupils to regional vocational schools and the like, often traverse other areas and are providing separate transportation to the same schools. Through cooperative agreements, fewer vehicles could be used to transport more than one districts' pupils at a resultant savings in cost to the taxpayers.

Many financial advantages have been gained by those districts where cooperative arrangements were made for sharing the same transportation facilities.

3. **The Department of Education should develop bidding forms and procedures for use by school districts.**

As indicated in the section on Resources for Public School Education, use of standard forms and methods will allow a technically complete and accurate contract to be written. Additionally, they will provide a base from which meaningful comparative data may be drawn. The school districts will then be able to evaluate the cost of their transportation service with other school districts and thus become fully aware of problem areas.

Administration

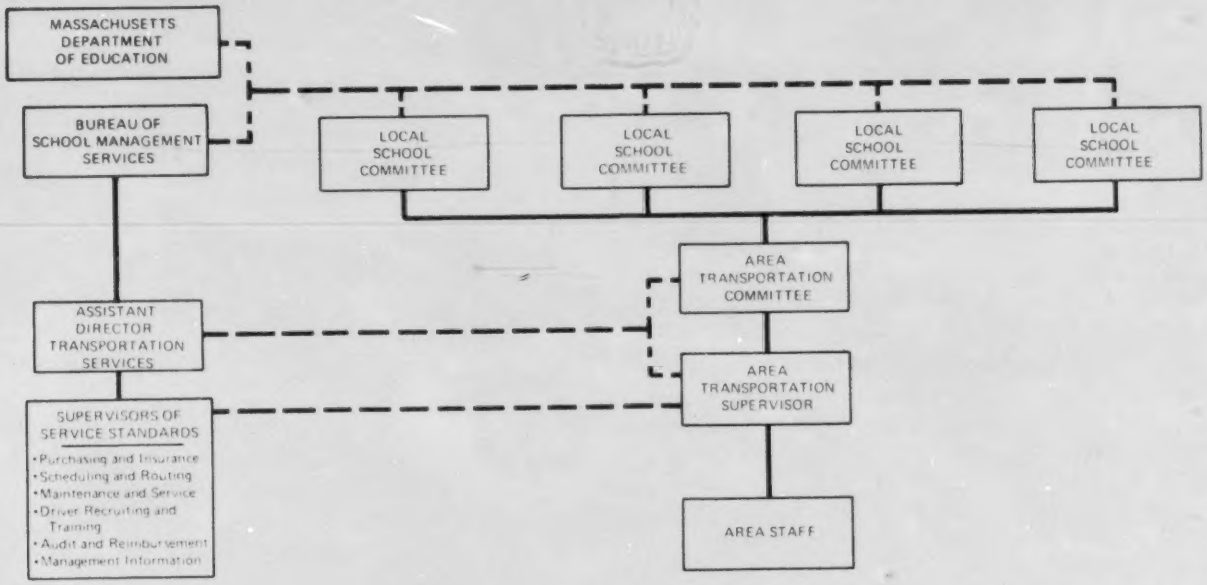
The routing and scheduling function for pupil transportation is usually directed by the assistant superintendent, business manager, or the school superintendent. Such routes and schedules are established manually from pupil lists, knowledge of the roads, and experience. It is customary for a contractor to cooperate with the delegated official when a contracted service is used. These routes and schedules are often reviewed annually. However, in scattered districts the routes are left unchanged for the duration of a contract without regard to shifting pupil populations.

In some cases, the contractor is allowed to establish bus routes and schedules based on a pupil list and school hours. Many communities stagger their school hours in order to allow more than one trip per bus.

Pupils are normally picked up at collection points. Where a door to door program is operated, it was instituted either through an administrative decision based on road and traffic conditions or parental pressures. Relatively few busses carry pupils to more than one school on any given trip. Complaints from parents are normally telephoned to the school principal and are usually referred to the superintendent's office for disposition. Typical complaints include late bus arrival, alleged route inequities, bus conditions, driver or pupil behavior, and other real or fancied problems. Placating late bus complaints consumes much time in the superintendent's office during inclement days. Being able to pass many complaints on to the contractor is a reason given by several superintendents for not operating their own busses. Despite the fact that the school department is responsible for transportation of children, not all contracts provide the school administrator with authority to reject a contractor's driver.

Regulation of pupil conduct on the bus is generally recognized as a function of the school department. However, this responsibility is turned over to the contractor in many districts and is

PROPOSED ORGANIZATION
PUPIL TRANSPORTATION ORGANIZATIONAL RELATIONSHIPS



ignored as much as possible by the school's administration. In many places, rules for pupil conduct are not publicized and/or enforced. Additionally, some school committees do not back up the disciplinary measures of the school staff. Many disciplinary reports are verbal and the penalties are not published. Very few districts utilize monitors on busses. Those that do, utilize them to enforce rules of safety on busses used for transportation of elementary school children.

EVALUATION

The initial make-up of bus routes and schedules is a trial and error exercise performed by school administrators such as superintendents and business managers who have little expertise in such activity. The routing network is then reviewed and modified annually. While spotty, the results are generally good although further efficiencies are possible.

The first few weeks of the school year are spent smoothing out any transportation problems so they can be ignored for the balance of the year. Because routing and scheduling is a manual operation, the alternatives that can be investigated are severely limited. In fact, most routes and schedules are not changed from year to year until factors such as overcrowding of busses or a large new subdivision requires attention.

One of the most significant determinants of route efficiency is the number of bus stops required. Door to door pickup, or use of many collection points for reasons other than safety can materially raise the cost of bussing. These factors increase route time and wear and tear on the bus. This could lead to reducing the pupil load per bus to keep the route time within acceptable limits.

In many cases, parochial school requirements have been superimposed on the public school network with no attempt made to integrate requirements. Such action results in duplication of routes and underutilization of equipment.

Information on routes and schedules is often broadcast or published by the local news media. At best, the entire structure is mimeographed and given to every pupil. Each student must then determine his own assignment. Under current operating procedures, individual assignments and schedules would be extremely costly.

Complaints about bus service are to be expected under any system of operation. At present, they require the superintendent's office to spend from one to four man-hours per day to provide answers. Many contracts do not include clauses which allow the school department to police busses and drivers. Thus, the superintendent is unable to set and enforce standards. School management officials allow the superintendent to transfer complaints to the contractor. However, this tends to increase the number of complaints when contractors fail to take corrective action.

The administration of rules for pupil conduct on busses suffers from inconsistency and a lack of published information. The most effective systems of controlling pupil conduct are based on printed rules which are issued to each pupil and sent home to parents. The other extreme is represented by the district which places responsibility for maintaining discipline on busses with the contractor and then refuses to take action. It is normal for these districts to complain that pupil conduct is not as good as it should be. The lack of written policies and rules leads to inconsistent treatment of conduct problems. Additionally, it puts a burden on the contractors as well as the principals to set policy.

RECOMMENDATIONS

4. **The Department of Education should develop computer-assisted routing and scheduling techniques for use by the school districts.**

This would be a function of the proposed Bureau of School Management Services. In the interim, local districts can improve effectiveness of their routing and scheduling by forming large cooperating units. This will enable the districts to hire a full-time transportation supervisor who would be responsible for the function.

It is estimated that a substantial reduction in busses would be accomplished if the most efficient system is utilized. An attainable goal would be a 5% reduction. This would generate savings of about $480,000 per year after data processing costs are deducted.

5. **School administrations should establish centralized student pickup locations unless safety considerations dictate otherwise.**

The use of established collection points has the following advantages. They will help to:

- Minimize route miles.
- Diminish time consuming stops.
- Load the bus as soon as possible.
- Lower student travel time.
- Reduce wear and tear on busses, particularly transmissions and brakes.

Pupils should walk to their school bus. A distance of up to one mile is not unreasonable if other students are expected to walk two miles to school.

6. **School committees should include a provision in all contracts giving the school department authority to set the conditions of bus and driver behavior.**

This contract provision would allow the school department to force the contractor to clean up a bus, remove a driver, or take other action to remedy situations leading to complaints. Also, existence of the agreement would tend to make the contractor more cognizant of these and other pressing matters.

7. **School administrations should designate a telephone number and a person to whom parents can call to obtain bus information or register complaints.**

The practice of parents calling school principals to register bus complaints results in duplication of effort. It causes unnecessary referrals since the necessary knowledge is usually available from the person responsible for transportation. While principals should be advised as soon as possible of any delays or changes in schedules, they should not handle complaints. The appropriate name and number should be publicized and sent to the parents. Thereafter, all complaints should be referred to that person. This will provide consistent treatment of complaints. In addition, it will provide the transportation administrator with an accurate picture of parental concern.

Appropriate information should be incorporated in any pamphlet that is directed and sent to parents and students explaining the transportation system, rules of conduct, and administrative procedures.

8. **School administrations should issue written rules of conduct to pupils and parents every year and post the regulations in each bus.**

It is impractical to expect anyone to obey unpublished rules. However, the rules should be of such nature that the school administration can and will enforce them. A few unenforceable regulations will weaken their execution. Classroom time should be taken as required to explain all rules and penalties to the students. A pamphlet should be issued which would include the rules of conduct as well as the telephone number to be called to ask questions or register complaints.

9. **School administrations should require written reports of rule violations from bus drivers as well as establish formal review procedures.**

In order that discipline can be consistent and supported later, a report form should be submitted by the bus driver to the school superintendent's office. The superintendent would then forward this report to the appropriate principal for perusal. The action taken should be recorded on the report. A copy would be retained by the principal and another returned to the superintendent's office. Then, the pupil involved should be notified and advised of penalties for this and

any future violations. The notations on the report could be used if future charges are received or questions as to the violation are raised.

The driver submitting this report should be advised of its disposition. A time limit of 72 hours should be set for replies.

Contracted Services

Contracted services for pupil transportation during the 1968-69 school year accounted for $26-million, or more than 90% of total transportation expenses. Over the last several years, such costs have been increasing at an annual rate of approximately 11%.

Transportation contracts have been signed with public carriers, municipal carriers, and private individuals. As such, the administration of contracts for pupil transportation consumes a significant portion of time and energy of designated officials. Bus contracts range from an agreement to lease one bus to a fleet of more than 50.

Contracted pupil transportation is, in itself, a legal agreement which is drawn up by the school superintendent or a member of his staff. Nominally, it stipulates terms and agreement between the school committee and the carrier.

Contracts usually specify the route, school, pupil population, or mileage. They are required by law to be advertised for bid purposes. Bus service may be provided through contracts with bus-fleet owners, individual owner-operators, transportation companies, or public transit systems. Payment for regular and/or additional busses may be based on a per mile, per route, per pupil, per specified time, or a combination of these factors.

Field trips, educational and scenic tours, athletic events, and special purpose accommodations may be bid separately or in addition to regular pupil transportation requirements.

Transportation for handicapped students may also be bid separately or negotiated between the superintendent and the parent involved. Often, a contract with a local taxi service is drawn up to provide transportation for this group. In several cases, a school district may own a small vehicle to provide bussing services to pupils requiring special education. However, it may form a cooperative arrangement with surrounding districts to furnish such transportation.

EVALUATION

Bus specifications, for the most part, are not directly controllable factors in contract services. This is due to the fact that carriers are required by state law to meet a certain minimum standard of safety, mechanical, and physical specifications. A problem relevant to 90% of the school districts which contract for pupil transportation is the construction of bid requests. These encompass not only bus specifications, but sound business and legal aspects that provide the district with adequate transportation services and assurance the contract is binding and enforceable.

In many instances, effective bidding on bus requirements is nonexistent because several qualified carriers are not available in the town or school district. In a significant portion of the smaller school districts, contract pupil transportation is negotiated with owner-operated carriers. Thus, each route is the responsibility of an individual who owns and operates his bus. It is not surprising to find these owner-operated systems producing the total income for the family involved.

An overall analysis of the administration of contract services associated with pupil transportation indicates it is handled adequately. With assistance available from a central committee or staff located at either the regional or state level, local school committees and superintendents could, however, construct, bid, and analyze bid requests more effectively to obtain better transportation systems at lower costs.

RECOMMENDATIONS

10. **The General Court should enact legislation to enable and encourage school committees to consider and negotiate bus contracts for periods of longer than three years.**

Contractors may consider submitting lower bids for transportation systems if longer write-off periods were available. Per year costs, including depreciation, would be less over a five-year period versus three years.

For example, assume a school bus costs $7,000. After three years, it has a residual value of $2,000 and the depreciation is $5,000 or $1,667 per year. The same bus, with a residual value of $1,000 after five years, would have depreciated at the rate of $1,200 per year. Thus, the difference in annual depreciation between three and five years would be $467 per bus. Assuming this amount could be saved on the 3,600 contracted busses, annual savings of about $1.7-million are possible.

11. **School committees should require performance bonds as an integral part of every request for Bid and Transportation Contract.**

Performance bonds will lend assurance to the school committee that transportation services will

be provided during the life of the contract regardless of the ability of the carrier to provide it. These bonds should be on an annual basis. However, the contractor should not be expected to provide a 100% performance bond for the entire contract period. Nevertheless, the district should, because of necessity, be primarily interested in covering itself until other arrangements can be made.

Owned and Operated Fleet

The reimbursement formulas in Massachusetts for pupil transportation provide no incentive for school districts to economize on these costs. Thus, school administrators tend to follow the course of least resistance. In practice, more than 90% of the Commonwealth's districts contract for pupil transportation services. This leaves a small percentage which own or lease bus fleets. Nationwide, the situation is reversed as public ownership approaches 80%.

Out of approximately 400 school districts, only four lease busses and 31 own their busses. Of the subtotal, 18 districts contract for pupil transportation using their own busses for field trips, athletics, and the like. This leaves 17 districts which manage their own bus fleets and employ drivers and maintenance personnel.

In districts which do operate their own transportation systems, a wide variance exists in prices paid for supplies purchased. For instance, the cost of gasoline varied from $0.193 to $0.294 per gallon. Except for gasoline, most districts do not advertise for bids. Other items purchased include:

	Prices Paid	
	High	Low
Oil (per quart)	$ 0.65	$ 0.125
Antifreeze (gallon)	2.50	0.99
Tires (9:00 x 20)	90.00	43.00
Batteries	75.00	17.00

Similarly, in vehicle maintenance, no uniform practices exist. About 50% of districts provide their own maintenance while others use municipal, or private maintenance facilities.

EVALUATION

Independent studies commissioned by various school districts have concluded that costs to the community would be reduced if it owned and operated a pupil transportation system. Other states have followed the lead of South Carolina and North Carolina where state-operated pupil transportation systems produce dramatically low per-pupil-costs. In Massachusetts, the cost-per-pupil for transportation in the 1967-68 school year was $51.46. In South Carolina it was $19.38, and $17.53 in North Carolina.

It is recognized that conditions in Massachusetts differ from the areas mentioned. However, the evidence is conclusive. A great amount of money should be saved through public ownership and operation of fleets of busses for pupil transportation. This is true where fleets of approximately 50 to 250 busses, possibly to serve more than one district, can be utilized.

RECOMMENDATIONS

12. The Department of Education should encourage the establishment of area transportation districts in Massachusetts.

Presently, each school district is responsible for administering its own transportation operation. Because of high costs, strong efforts should be made toward combining individual school districts into larger area transportation facilities. Additionally, the responsibility for transportation operations should be delegated to smaller but more qualified groups of administrators.

Area directors, operating under guidelines established by the state and in cooperation with the school district administrations, should evaluate the school district operations. In addition, they should assist with operational matters, and formulate long-range plans for achieving low cost, improved service consistent with maximum safety of operation. This should be done in full accordance with individual needs of each school district.

These directors should be responsible for functions such as contracting services, purchasing of equipment and supplies, operational procedures, maintenance of vehicles and facilities, driver recruitment and training, scheduling and routing, safety programs and performance, as well as operating costs and reports.

The ultimate objective should be fleet ownership and establishment of adequately staffed area maintenance facilities. Both North Carolina and South Carolina have done this. They provide good examples of efficient, low-cost regionalized pupil transportation at $17.53 and $19.38 per pupil, respectively. In Massachusetts, the per pupil cost for the same year was $51.46. The average cost in the United States is $46.95.

About 80% of all school busses in this country are owned by school districts; whereas approximately 10% are publicly owned in the Commonwealth. The higher cost of public transportation in Massachusetts reflects some of this difference.

The cost-per-pupil of transportation in Massachusetts could be lowered at the very minimum to the national average. This would result in a reduction of 8.7% and represent an annual saving of approximately $2.5-million.

13. The General Court should amend the law to limit state reimbursements to school districts for pupil transportation costs.

The state reimbursement laws do not set a maximum cost for pupil transportation over which the districts would not be reimbursed. Thus, there is no incentive for the districts to negotiate the lowest contract price for service rendered nor to achieve maximum efficiency in the case of owned and operated systems. Bids and contracts should be analyzed and approved at the state level with the objective of providing pupil transportation at a realistic cost per pupil. In those cases where costs exceed an established maximum for either contracted services or costs for new busses, the school districts should be accountable for the excess costs.

Transportation of the Handicapped

Handicapped students are transported to a number of locations, both within and outside the school district. The number of pupils conveyed to any single destination from a district varies from one to 20, with the majority being less than 10. Many districts contract for such transportation with local taxicab companies. Others reimburse parents, provide their own, or contract with a bus company supplying day school transportation of these students.

Transportation of handicapped children is usually a minor part of the duties of the district transportation administrator. However, the per-pupil-cost is substantial. It varies from $115 to $2,000 per year; the majority reporting costs in the $200 to $400 range. This is the result of small numbers of students being transported relatively long distances. Coordination between districts is limited.

EVALUATION

School districts in Massachusetts are not providing transportation for handicapped students in the most effective manner because efforts are fragmented. Due to the fact that each district is sending a few students to a number of locations, the transportation network required for any particular destination is not coordinated. This results in costs to individual districts which are higher than necessary.

RECOMMENDATION

14. Agencies responsible for education of handicapped persons should also be responsible for their transportation.

The agency providing the educational service should be given responsibility for arranging the transportation requirements of its students. Such action will make the operation similar to other transportation functions in that movement of all students arriving at a single location will be coordinated by one office. This would allow development of a coordinated transportation network to serve each facility. A further benefit of the plan would be the continuing application of expert knowledge to their transportation needs.

The simplest method of funding is for the Commonwealth to reimburse the coordinating agency directly for 100% of the cost. However, this would require legislative action since the current reimbursement is 50%. Necessary legislation should be introduced by the Department of Education, the Department of Mental Health, and the Department of Public Health. A less desirable method of funding would be for the agency to bill the participating districts based on pupil-mile costs plus special charges for lift-equipped vehicles to convey the severely physically handicapped.

Procurement System

A recent survey of more than 200 corporation officials reveals that 89% believe procurement performance would improve if responsibilities were more clearly pinpointed and capabilities of present employees were developed to a higher level. In the Commonwealth of Massachusetts, $70-million are spent annually for educational materials. Additionally, $139-million are allocated for purchased services and $115-million are provided for new school construction projects.

Influenced by school district size and local politics, school purchasing authority varies tremendously throughout the state. The personnel responsible for spending large sums of money range from numerous individuals who grew up with the system to the occasional professional who is concerned with procurement as well as all areas of school business management.

With occasional exceptions, formal procurement policies and procedures are virtually nonexistent. The lack of communication among districts and the state purchasing officer greatly affects potential cost savings from the function. The quality of the procurement inventory management system as a whole, differs throughout the various school districts of the state. In general:

- ► Supply needs are identified by individual schools or departments. There are few plans to organize this process in order to distribute procurement work load throughout the year.
- ► Requirements are consolidated centrally. However, accurate records are rare from which to question particular needs or balance various requirements among schools.
- ► Bid laws, which vary from city to city in dollar level, do not reflect current costs of materials. Often, items are bid in the same manner, regardless of complexity or costs.

Bid notices are placed in newspapers by city officials or the school superintendent's office. Most often, specifications are prepared by the user or those who have time. Consequently, specifications vary in quality and completeness. Records of supplier performance or evaluation are rare.

Procedures are usually developed by someone in the superintendent's office and distributed through a district with appropriate instructions.

EVALUATION

Wide differences in the procurement function are expected because of school district resources. However, variations in basic procurement principles and practices across the Commonwealth point out the need for improved understanding of what an efficient system must contain, regardless of budget or size.

There is a lack of clear-cut authority and responsibility between school administrations and schools. This results in inadequate specifications and poor communication with little or no follow-up of purchases. It was noted that:

- ► The personalities involved affected efficiency wherever a town or city administration is involved in school procurement. The effort is, at best, diluted and considerable friction often results.
- ► Procurement has been downgraded as a management function. This was evidenced by clerical solutions rather than concentration on supplier evaluation, cooperative purchasing, and quantity consolidation.
- ► Communication about prices, suppliers, new items, unique systems, or improved purchasing techniques between districts are informal and limited.
- ► Procedures are developed for clerical needs rather than providing controls and information necessary to make procurement decisions.
- ► Most schools approach the market at the same time and thus work unnecessary hardships on suppliers.
- ► Bid laws, in some cases, require bidding at ridiculously low dollar levels which do not represent current costs and price levels.
- ► Specifications for similar items vary. In many cases, they are also incomplete and do not meet performance levels desired.
- ► Internal control of supplies and materials is haphazard.
- ► Methods of payment and invoicing are slow and cumbersome. No consideration is given to the size of purchase.
- ► There is no single individual at the state level to whom business officials can turn for leadership in the area of purchasing.
- ► Very few districts have investigated the use of open-end or requirements contracts.
- ► In larger districts, little thought is given to designing a procurement system which could eventually utilize a computer.
- ► Prices for similar items differ from community to community.
- ► Because of the lack of communication, it is virtually impossible to effect standardization on commonly used items.
- ► With few exceptions, purchasing people do not take leadership and provide users with information on lead time, available sources of supply, competitive brands, or systems.
- ► Practically all business officials would welcome cooperative procurement assistance and state contract aid.
- ► Most business officials would use a purchasing manual which detailed the areas of specification writing, inventory control, and negotiations.
- ► It is doubtful if negotiation is used. Techniques of establishing correct prices are restricted to three quotes or bids.

There are some follow-up or expediting systems in use. However, most districts ignore vendor contacts unless an emergency develops. Incoming material is normally checked by a person in the receiving school. These materials are stocked in many locations and little control was evidenced. Payments to suppliers often lag due to lengthy invoice approval cycle. As a result, vendor discounts are lost in many instances.

A well-organized purchasing system in each school district should result in streamlined and efficient operating methods. However, it will not necessarily produce substantial price reductions

for goods and services. Collectively, school districts represent the largest single dollar purchasing source in the state. Individually, they are powerless to effect quantity purchases. Therefore, the Task Force recognized both needs by preparing a school purchasing manual to answer day-to-day operating needs.

RECOMMENDATIONS

1. **The Department of Education should develop a uniform purchasing system for use by school districts.**

A sound business system will integrate and organize a series of tasks or objectives which enables management to fulfill its purpose. Throughout the Commonwealth, each school district performs the five basic procurement functions of requisitioning, bidding, purchasing, receiving, and payment. The manner in which these roles are performed often produces inefficient results.

It was recognized early that a need for practical assistance existed in the procurement field. Therefore, a manual was prepared to outline a system which a vast majority of the districts could adopt with benefit. It might be considered as an interim system and a step toward computerization. Proper use of this operating manual should yield manpower savings and form the basis for uniform reports. In addition, it will produce more usable management data on a state-wide basis. Included in the manual are a number of subsystems which, if adopted, would simplify clerical processing. Certain proposed areas include:

- ► A "small purchase" system. Since more than 50% of all purchases, other than annual orders, are for low-dollar-value items, a short-cut system for handling them was developed. Adoption of this system will reduce clerical effort to a considerable degree.
- ► Development of uniform procurement forms including purchase requisition, purchase order, bid request, request for quotation, blanket order release, and small purchase order system. Use of these forms on a state-wide basis could result in savings in printing costs.
- ► An open-end or blanket order approach to purchasing. Adoption of this system will simplify the procurement function.

Other suggestions for improved operation are:

- ► Establish a signature approval system for purchase orders and invoice payments based on dollar amount involved. In most districts, the same procedure is followed in preparation of a purchase order and payment thereof regardless of the money involved. Modern purchasing techniques delegate responsibility for these actions to lower levels.
- ► Most school districts have four levels of authority which could be responsible for action. In the area of purchase orders, the head custodian, lunchroom supervisor, and school principal should have approval authority to $50. The business manager or assistant superintendent should be delegated approval authority to $200. Approval authority up to $500 should be given to the superintendent and the school board should have approval authority for purchases over $500. In the area of invoice payment, the business manager or assistant superintendent should have approval authority up to $500. The superintendents should be granted approval authority to $2,000 and the school board given approval payment authority for invoices of more than $2,000.
- ► A standard competitive quoting and formal advertising procedure. All school districts should be permitted to adopt the $2,000 maximum limit for public advertising and written contracts as prescribed in the Acts of 1967. Often, the costs involved in the bid cycle offset any potential savings. In addition, inflation and rising prices have lowered the value of the purchasing dollar. For purchases under $2,000 in value, oral or written competition would be required. Further, all purchases should be fully documented as to selection of source and justification of price.

Local interpretations occasionally are sound. However, in the overwhelming number of school districts, large savings can be attained through state-wide standardization of these forms.

2. **The Department of Education should create a position in the Bureau of School Management Services to coordinate purchasing activities.**

This individual will assist all school districts in carrying out decisions of the continuing purchasing committee. In addition, he would provide the continuity needed for effective committee operation. One significant contribution this specialist can offer is to coordinate procurement information among school districts in the Commonwealth. Finally, he will provide the initiative and direction necessary for special studies, reports, and other committee needs.

Qualifications for this position should include a degree in Business Administration, and a minimum of seven years professional purchasing experience.

At present, each school district is operating completely independently in the area of purchasing. They are not aware of the availability of state contracts and, in many instances, not cognizant of prices being paid by neighboring communities for identical items. In an area involving technical knowledge, organized methods are required to disseminate information of a practical nature.

Therefore, a publication devoted to procurement should be developed under the guidance of the continuing purchasing committee, and issued on a monthly basis to all school districts. It should report the state-wide effort at implementing the recommendations of this report. Furthermore, this publication should report on new products, print specifications, list surplus school equipment for sale, as well as print brief articles on good ideas developed in local school districts. It should also contain a summary of each meeting of the continuing purchasing committee.

3. **School committees, with assistance from the Department of Education, should develop cooperative purchasing on a regional basis.**

The advantages of developing this activity on a regional basis are twofold. First, there would be a reduction of cost through a single advertising and bidding procedure covering a number of schools. Second, lower prices on procured materials will inevitably result from the combined volume. The suggested procedure would result in a contract to a bidder on a regional basis. Then, each school district would place purchase orders directly with the vendor at the award price.

Although the practice is common in other states and legislation in Massachusetts permits cooperative buying between political subdivisions, only one significant example of such cooperation was noted during the study. This is an excellent illustration because it recognizes the rapidly expanding field of multi-sensory communications. Unlike textbooks, items such as film libraries, loops, tapes, and sensory bits are unique and expensive. Consequently, utilization is limited to sporadic use. Under the leadership of Project SPOKE, nine Massachusetts school districts share a $100,000 film library. Approximate savings of 75% are realized through central purchasing when compared with commercial costs to member schools contracted separately. Not included in these savings is the availability of expert training aimed at the student's total learning process.

Another example of a cooperative purchasing effort was developed in Bergen County, New Jersey. The county, operating under permissive legislation recently offered a cooperative bidding procedure to its 55 municipalities and 50 school districts. Each of these units has joined the program on a voluntary basis, maintaining the right to drop out if they wish. None has done so. Consideration of a tighter form of organization was discussed but rejected. Advocates of the Bergen County system state it is the spirit and not the letter of the law which gives life to the program. The cooperative effort was started on a small scale with one commodity. When no problem developed, other items were added. At this point, annual savings of $100,000 have been obtained. Estimated savings of $500,000 per year will be realized when all possible items are purchased in this manner.

Under the program, the activity leadership is limited to bidding and control preparation. Each local purchasing specialist buys directly from the selected vendor. The county purchasing agent considers the success of the program is due to personal involvement of local purchasing people in the program.

Substantial savings can result from the organization of all school districts into a number of regional buying groups in a similar manner. A survey was made of 70 school districts covering a number of supplies. The data are shown in the table below, and the range of prices for each item is large. This results from a combination of variation in specifications, volume, and buying acumen. As the table indicates, if all schools represented in the survey purchased at the low

COST ON SELECTED ITEMS—INDIVIDUAL VERSUS UNIFIED BUYING

	High Price	Low Price	Weighted Average	Total Cost	Low Price Cost	Saving	Percent Saving
Spirit duplicating paper	$0.99	$0.70	$0.806	$138,302	$120,171	$18,131	13.10
Construction paper	1.22	0.78	0.879	18,285	16,222	2,063	11.28
Mimeograph paper	1.15	0.71	0.842	28,510	24,039	4,471	15.68
File folders	2.00	1.21	1.432	30,009	25,358	4,651	15.49
Chalk	1.13	0.79	0.942	2,987	2,504	483	16.17
Liquid floor cleaner	3.40	1.27	2.167	34,645	27,370	7,275	20.99
Floor wax	3.85	2.00	2.813	57,257	40,712	16,545	28.89
Fluorescent bulbs	21.60	10.80	13.505	38,247	30,585	7,662	20.03
				$348,242	$286,961	$61,281	17.60

price there would have been a saving of 17.6%. Extending this saving to all office, teaching, custodial, and maintenance supplies purchased would result in annual savings of about $4-million.

It can be argued that all supplies could not be purchased through a regional organization. This is probably true and, to some extent, the savings are overstated. However, it is also true that to obtain full savings, school districts which have not given much consideration to quality gradations may want to turn to utility grades of some supplies.

On the other hand, it is very likely that savings, as large as they seem to be, are actually understated. The low prices have been obtained by single school districts. If these items are sought on a regional basis, it would be reasonable to assume that bids will be lower than the ones in the table. Consequently, vendors will have to be more competitive in a larger scale bidding situation.

The problem of advancing toward a complete regional buying system is considerable. It would be highly desirable to start on a test basis with the formation of a pilot group. A number of contiguous communities could get together and select one commodity and prepare a specification for that item which is acceptable to all members. This could be bid and a contract awarded. If the results are satisfactory, the program can be expanded into additional regional groups and other products.

There will be a number of problems to solve; development of the system for accumulating volume requirements, method of sharing administrative and advertising costs, who will sign the contracts, and the like. The availability of computer time would be extremely helpful as the program develops. For these reasons, the continuing purchasing committee should be represented on the pilot group and the aid of the specialist in purchasing services at the state level be obtained. In addition, a representative from the State Purchasing Division could be very helpful. On a long-range basis, the state should be divided into regional committees with every school district represented. Responsibilities of the committees would be to:

- ► Select commodities for cooperative purchase.
- ► Prepare specifications for these commodities.
- ► Accumulate the volume requirements and shipping points.
- ► Advertise for bids.
- ► Award contracts.
- ► Issue copies of the contract to all members.
- ► Notify the purchasing specialist in the Bureau of School Management Services of actions taken, for inclusion in the monthly newsletter for distribution to all school districts.

It will be the responsibility of each member school district to purchase their proportionate share of the guaranteed amount directly from the vendor. In the early development stages of the program, it will be very important that a formal feedback system be established. Thus, any dissatisfaction with the system can be uncovered and corrective action taken.

4. School administrations, with assistance from the Department of Education, should expand school district purchasing under state contracts.

In a few isolated instances, school districts have purchased articles under existing state contracts. Most districts are not aware of the availability of such contracts or that they may make use of them. In 1968, permissive legislation was enacted making this possible. At the present time, a new bill is being enacted to simplify the process of local purchasing under these contracts.

The state has under contract many of the items that school districts now are buying. In most cases, the price paid by the state is substantially lower than those indicated in the table below.

LOW PRICES VERSUS STATE PRICES FOR THREE COMMODITIES

	Low Price	State Price
Liquid Floor Cleaner	$ 1.27	$0.57 per 55 gallon drum 0.70 per 10 gallon drum 0.80 per 5 gallon can
Floor Wax	2.00	0.80 per 55 gallon drum 1.01 per 5 gallon can
Fluorescent Bulbs	10.80	9.12 per case

Since the total school volume, in most instances would far surpass the normal state agency volume, there is likelihood that lower prices could be obtained if these items and others were incorporated into state bids. The supplies and equipment most suitable for school-state cooperative buying would be office furniture, equipment, custodial supplies, as well as automotive products.

School district participation in state contracts is operating successfully in 13 states according to a 1967 survey. In New York State, where it has been in effect for 16 years, it is estimated that 90% of the school districts participate. A recent customer service evaluation indicated overwhelming satisfaction with the system.

Although dollar savings are not available from New York State, a recent survey of school districts revealed:

- Some 99% of the schools used Division of Purchase award announcements as price guides for comparison, reference, or negotiation purposes.
- About 87% believed they obtained more favorable prices or terms in their regular purchasing as a direct result of state contracts.
- The general quality of items purchased through state contracts was satisfactory to practically all of the school districts.

One of the first responsibilities of the continuing purchasing committee would be to establish a working relationship with the State Purchasing Division. Together, they should:

- Establish an order in which state contracts should be made available to school districts. If all districts were to start doing so for every possible commodity it would result in chaos.
- As each contract is agreed upon, determine specifications acceptable to both state and school districts. Ascertain if each district is to submit guaranteed purchase volume in advance of bidding or if a total state estimate is sufficient.
- Stipulate in the contract that vendors honor purchase orders from the school districts.

In order for this program to develop to full utilization, it will be necessary to furnish additional staff for the State Purchasing Division. The increase can be made on a gradual basis as items are added on a state-wide basis.

To anticipate objections that acceptable quality materials cannot be purchased for prices paid by the state, Task Force members checked with one of the larger school districts in the state. They have developed their own specifications for a floor cleaner with which they are quite satisfied.

The potential for savings is great. School districts currently spend $15-million to $20-million a year on equipment and supplies available under state contracts. These expenditures do not include any food or lunchroom equipment. The price comparison sampling indicated the range of possible cost reduction. Therefore, the possibility exists of a 20% reduction over the list prices obtained in the sampling. This would amount to annual savings of $3-million over the savings indicated from regionalized cooperative buying.

5. The Department of Education should establish a state-wide continuing purchasing committee.

The committee should serve in an advisory capacity to school business officials. To organize this group, the Director of the Bureau of School Management Services as proposed in the section entitled Manpower would appoint members from a list of candidates submitted by the school districts. These members, normally superintendents or business managers, would represent their area and reflect different types and sizes of schools. They would be appointed for staggered terms so that two new members would join the committee each year. Successive terms should be prohibited. This committee would be supported by the following technical purchasing specialists:

- The Manager of Purchasing Services, a newly created position, will serve as a permanent member of the committee and will act as the executive secretary.
- A representative from the Purchasing Agent Division of the executive office for Administration and Finance.
- A professional purchasing management representative from the business community who would be selected from a representative list of candidates proposed by an organization such as Associated Industries of Massachusetts or National Association of Purchasing Management.
- The chairman would be elected by committee members to serve a one-year term.

The committee would meet a minimum of six times annually. Its responsibilities should include:

- Assigning priorities in carrying out recommendations of this report.
- Developing state-wide quality standards and specifications for school supplies, materials, and equipment. Establishment of quality standards and specifications, which are preprinted and available on a state-wide basis, will save individual schools and their staffs thousands of man-hours per year now expended in preparing duplicate specifications. Excellent specifications for specific commodities are now in use in individual school districts. They should be identified and adopted for state-wide use. Eventual evolvement of a coded standards system would also enable information to be gathered electronically and used for effective value analysis.
- Installing uniform procedures at the local level, using the Massachusetts School Procurement Manual as a guide.
- Promoting area participation by all schools. This fosters involvement in the plans and operations of the committee through subcommittees and special assignments.

- Developing a standard list of commonly used supplies with each item identified by a description and possibly by catalogue number of one or two principal suppliers. These lists can be used to determine annual quantities of items and increase the potential for volume purchasing.
- Conducting special surveys with particular emphasis on standardization of equipment throughout the state.
- Developing "link-up" relationships with such professional organizations as the National Association of Purchasing Management, Massachusetts Association of School Business Officials, and National Institute of Governmental Purchasing.

One possible area for such a survey would be in the use of office copiers. Currently, each district utilizes a variety of machines and paper. The cost per copy varies accordingly.

In 1969, Michigan conducted a value analysis study of copying machines used in its state-wide departments. The result was a contractual arrangement with a leading office copier manufacturer to provide the state with all machines required as well as the necessary supplies. A marked decrease in the cost per copy, totaling close to $387,000 annually was obtained by this simple move.

Textbooks

During 1969, approximately $9-million was spent on textbooks in Massachusetts. Procedures for the purchase of textbooks do not differ from any other school system procedures. Each municipality, through teacher committees, spends many man-hours on text selection. These selections then follow the standard organizational format through the department heads, principals, and school committees to the final authority where purchase orders are issued. In some instances, requisitions are grouped to take advantage of better prices or ease in delivery to a central location. Many times, however, individual orders are placed by schools.

No definite program emerges that tends toward long-range planning. In general, texts are not selected for any specific period of years. Furthermore, no attempt is made to hold prices for a specific period of years or the remaining portion of the year to secure a fixed price that might approximate the useful life of the book. Paperback books are being used on a very small scale. Actually, they are utilized as supplements rather than official texts.

In other states, textbook selection, as well as procurement policies, include state-wide adoption, publisher guarantees of prices over a fixed number of years, and other forms of price protection. In these states, controversial methods are constantly reviewed and revised because of the fine distinction between local autonomy in educational matters and the role of the state. Massachusetts has not attempted to organize state-wide adoption of textbooks.

EVALUATION

Consideraion should be given to the man-hours involved in text selection, the 400 districts which make decisions, the number of subjects taught, the variety of grades in each subject, and the cost of textbooks. Thus, the magnitude of this problem becomes evident.

In general, the procedure followed is to decide whether the curriculum needs reviewing or modernizing. This should be done during the summer as a special project. Several persons, usually teachers, are assigned full-time to the task. It can either be a consideration of one course, a review of subject matter from grade one through 12, or any portion therein. This results in many man-hours being spent in establishing curricula satisfactory to the individual system, whether it be by school or by municipality. Additionally, there is no evidence that studies by other concerned groups, even for similar subjects, are used to minimize costs.

Procedures followed do not benefit from quantity buying or guarantee of fixed prices over a period of years. Consideration of the purchasing function does not exist. Furthermore, once selections are made every routine thereafter becomes relatively automatic. Total man-hours utilized in reviewing curricula and the selection of texts are unknown. However, the methods followed are very costly.

RECOMMENDATIONS

6. **School committees should organize regional committees to select and maintain lists of recommended textbooks for each subject level and establish procedures for their procurement.**

One regional committee would replace separate committees in each participating school district. Subcommittees should be established to select one or more textbooks at each subject level. The cross-pollination of thoughts and ideas from the several school districts could result in an excellent selection of recommended textbooks. A single review of available texts would eliminate duplicate consideration by several districts and save valuable time. The regional committee would

seek bids on the recommended textbooks. Each district could then make their selection from the bids received. Volume purchasing methods should also result in reduction of overall expenses.

7. **School administrations should use paperback books where practical and economical.** School systems using paperbacks are having good experience with them. They are less expensive and, therefore, savings are possible. The pupils receive them well; particularly so, when they are permitted to mark and keep them. The life of these books, in relation to their cost, does not create a problem.

School Food Service System

By September 1974, it will be mandatory that every child attending school in Massachusetts be offered a lunch. When the legislative action is adopted, it will, in effect, increase the current school lunch program budget from $60-million to $100-million.

Since the National School Lunch Act was enacted in 1946, there has been increasing evidence of the relationship between nutritional standards and a child's capacity to learn. Also, it is envisioned by most nutritionists that the limited breakfast program will be extended to many thousands of children, perhaps made mandatory by 1980.

At present, each school district operates its own program which is completely independent of other districts. However, auditing, evaluation, and technical assistance functions are available from the Bureau of Nutrition Education and Food Services.

District management of the program entails purchase of foods; equipment and supplies; menu planning; direction and training of personnel as well as food preparation, scheduling, servicing, and accountability for the finances involved. Although many free lunches are provided to the needy, those pupils who can afford to pay are asked a minimal charge. Many a la carte selections are also obtainable in several schools. With a subsidy provided for each type A lunch served, participation in the program where offered averages 70% throughout the state. In addition, federal food supplies are available to every school district.

EVALUATION

There is no argument that a school's primary purpose is devoted to education. However, there is disagreement about the role food service programs play in the educational system. Administrators' views are conditioned by government controls and the fact most school lunch programs lose money. Some administrators believe objectives should include health education and promotion of good food habits. In many school districts, there is minimal interest in the program by the school administration. Usually, school districts coordinate lunchrooms within their area through a director who plans the lunch program. These directors are dedicated individuals who have a background in nutrition but almost always lack administrative training.

Purchasing practices vary greatly. Consumables such as milk, bread, and ice cream are bid on a yearly basis. In some districts, staples are bid every six months. Normally, the purchasing function is carried out by the director after consulting the manager's inventory list. In instances where control is lacking, individual cafeteria managers take care of purchasing duties. Occasionally, the city purchasing agent accepts a low bid without understanding the food quality and yield.

Standard specifications for purchasing and uniform testing of food products are minimal. Furthermore, the state-wide shortage of storage makes quantity purchasing impossible. Consequently, the purchasing function is neither planned nor is it regionally carried out. Under normal conditions, equipment, utensils, and wares are not inventoried.

Accounting procedures are not standardized. Lunch programs are normally financed through a revolving fund. However, there is great variation between what is charged to this fund and to the general fund (director's and/or manager's salary, equipment, telephone, custodial requirements, maintenance help, and power). Many districts budget and transfer funds from the general to the revolving fund rather than have the lunch program reflect a loss.

The programs operate rent free. Monthly statements are prepared in order to obtain federal reimbursements; but few districts prepare a monthly profit-and loss-statement for each school. The cost of free lunches is absorbed by the individual lunchroom and is not charged back to the

district to show realistic income, percentages, and ratios.

Cost of the school lunch program is rapidly increasing due to escalating labor costs. Yet, collective bargaining between schools and cafeteria employees varies from district to district. As a consequence, no guidelines are available to negotiate local differences. These costs are a major concern to lunchroom managers. Therefore, labor utilization studies are needed.

Accrued cash is handled in a variety of ways. Quite often, it is counted by the cashier and recounted in the director's office before banking. Cash and sales are rarely reconciled; nor are leftover foods adjusted with that sold.

The infinite number of kitchen layouts preclude comparative efficiency rates. All kitchens meet sanitary standards, but the age and repair of equipment does vary. Menus, portion sizes, and number of choices differ from district to district.

The few districts that have instituted central kitchens have successfully serviced schools without kitchens and are offering a nutritious meal to all children. By drafting and supporting legislation, the Bureau of School Food Services recognizes this trend. The bill promotes central kitchens through financial incentives and will allow either the schools or the state to contract with private industry for various food services.

Periodic audits of cafeteria operations are conducted by the bureau to assure compliance with the federal program. In addition, an in-depth evaluation is conducted by field nutritionists once a year. Results of this study are returned to the districts in a synopsis form.

This service is now provided on a marginal basis due to understaffing of personnel and lack of funds. The aim of these efforts is to reduce costs. Unfortunately, there is no one solution for overcoming the diverse problems each administrator faces. Trends in other states and cities point to a satellite kitchen approach with either a private contractor or centralized school management. Thus, the thrust for meeting tomorrow's challenges will come from consideration of private contractors, efficiency foods, mass purchasing, centralized production, and distribution of nutritious and attractive lunches over great distances.

RECOMMENDATIONS

1. **The Department of Education should create a Division of Nutrition Education and School Food Services.**

Presently, the Bureau of School Food Services reports organizationally to an assistant commissioner for school facilities. With the exception of kitchen construction, the goals of these two activities are entirely dissimilar. In fact, the importance of food services not only to schools but to all segments of Massachusetts society has been recently recognized through a 40% increase in the bureau staff. This proposed division would have three bureaus:

- ► The Bureau of School Food Services—It would have responsibility for financial and technical assistance at the district level. Also, this bureau should concentrate on long-range studies and plans for immediately implementing the recommendations in this report.
- ► The Bureau of Commodity Distribution — This function currently handles approximately $12-million in government commodities. The addition of summer camps, day care centers, hospital and correctional institutions will increase this value to $39-million in 1971. Management of this program under one division will effectively complement the eventual mass distribution of packaged lunches to schools.
- ► The Bureau of Nutrition Education—Perhaps the greatest savings to the state will eventually stem from innovative and creative nutrition education. Rising hospital costs support the widely accepted view that preventive health and proper nutrition measures greatly reduces more costly solutions which are required at a later date.

During 1970, the bureau's nutritional staff tripled. Their responsibilities, in addition to developing overall courses for classroom teachers and conducting seminars, should be to concentrate their education in the lower grade levels. The reasons are obvious. If proper nutrition aids the learning process, it is best to start at a very early age. The minimal costs necessary to properly staff this new division will be more than offset by the savings available through implementing the recommendations contained in this section.

2. **The Bureau of School Food Services should adopt criteria for measuring efficiency of individual school and district food service operations.**

The type A meal is a standard unit throughout the state and is a valid base for comparison. In addition to participation rate and meals served per man hour, it is recommended that per-serving food cost, value of United States Department of Agriculture commodities, labor charges, other costs (utilities, operating expenses, miscellaneous supplies, and the like) as well as total costs be analyzed in reference to meals served.

This measurement system will rapidly identify an area for evaluation at the local level. Thus, the Bureau of School Food Services will be more rapidly aware of problem areas and assist schools on a priority basis. There are seven basic measurements that can be helpful in evaluating a food service operation. They are participation, food cost per serving, labor cost per serving, other cost per serving, total cost per serving, meals served per man hour, and value of U.S. Department of Agriculture commodities per serving.

These measurements are not true cost accounting figures. However, they are used to stimulate the administrators of food service facilities to review their operation in detail.

3. **School committees should require the use of central kitchens to serve more than one school.**

The Bureau of School Food Services should promote and encourage this concept. Small, self-contained kitchens are economically unsound because of the area required, the $20,000 to $50,000 needed to furnish the facility, and inefficient utilization of labor. Consequently, each district or group of districts must look at operations from the standpoint of capital outlay and efficiency measurements. Several advantages are inherent with a central kitchen. They will:

- ► Provide economical service for schools without need for kitchen facilities.
- ► Reduce payroll by better utilization of labor.
- ► Consolidate purchasing.
- ► Reduce and centralize inventory.
- ► Eliminate major equipment purchases for school serving centers.
- ► Produce positive portion control.
- ► Effect positive control over meals produced and served.

Legislation provides that meals be made available to all pupils. Therefore, each school district in Massachusetts must study its facilities to ascertain if there is any kitchen which could be used to prepare pre-portioned meals with throw-away utensils in disposable packages for delivery to other schools. When an existing facility cannot be used as a central kitchen, one must be built. This could be accomplished by extending a present kitchen, or by incorporating a central kitchen in the next new school or school addition. Such a facility can also be obtained by outfitting a free-standing building. Thus, the 900 schools that do not offer meals could be served from central kitchens. Furthermore, new schools would only require a serving area for students.

For self-contained kitchens, equipment costs alone would be more than $18-million. Existing kitchens, not performing well by efficiency measurements, could be phased out as the schools are included in the central kitchen concept. This would stop wasted expenditures on equipment repair and replacement, as well as the use of ineffective labor. Additionally, it would bring about a better utilization of space in these inefficient operations.

Any time a capital outlay is made to rehabilitate an existing facility, efficiency measurements must be studied. Such an outlay might increase operational costs enough to make it an inefficient facility. If proven, the operation should be phased out and the school included in the central kitchen concept. Current legislation should permit schools to be reimbursed for construction of central food production centers to prepare school lunches for distribution to any school in a city, town, county, or regional school district.

Convenience foods are bringing about dramatic changes in the food industry. All school systems are presently using them in some form. The use of such foods will raise production costs. Proper usage will, however, lower the cost of labor. As the technology becomes more sophisticated, it is expected these convenience foods will become available in a pre-portioned type A form.

In large city or regional central kitchens, an efficiency rate should be obtained to enable these production centers to prepare their own convenience foods. Higher equipment costs, conveyers, packaging machinery, and the like, as well as freezer space would be required. However, truckload lot purchasing, low labor cost, and high efficiency are gained. New York City school officials state this system cut labor charges by 40% while holding food costs at the same level. Present lunchroom labor costs in Massachusetts are $21-million. With the addition of 900 schools to be served in 1974, a conservative cost would be $24.6-million. Applying New York City's experience to this figure, a labor saving of $10-million would be realized through the use of efficient central kitchens.

4. **The Bureau of Commodity Distribution should channel available government-donated commodities to food processors for conversion into finished products for resale to various school district systems.**

New legislation will allow the Bureau of School Food Services to contract with private processors for delivery of food components or ready-prepared meals. The United States Department of Agriculture makes certain foods available to the school lunch program. Those schools which take advan-

MASSACHUSETTS DEPARTMENT OF EDUCATION

OFFICE OF SCHOOL LUNCH PROGRAMS

Av. No. of Days

Av. Daily Part.

National School Lunch Program and Special Milk Program

REPORT AND CLAIM FOR REIMBURSEMENT

– SCHOOLS SERVING ONLY MILK COMPLETE ENCIRCLED QUESTIONS ONLY –

Calendar Month_____ Enrollment_____ Average Daily Attendance_____ Agreement No._____

1. Name of School as shown on Schedule "A" of Agreement

_____

Address (Street & No. or R.F.D. No., City)

_____

2. Name of Sponsoring Agency exactly as shown on pg. 2 of Agreement _____

Address (Street & No. or R.F.D. No., City)

_____

NATIONAL SCHOOL LUNCH PROGRAM — SECTION A

Balance Sheet
Date_____

Assets	
Cash	
Reimbursements Due	
Inventory (excludes U.S.D.A.)	
Total Assets	
Liabilities	
Accounts Payable	
Wages Due	
Total Liabilities	
Net Worth (beginning)	
Profit or Loss	
Net Worth (end)	
Total Liabilities and Net Worth	

Ratios: Per Meal Served

Food	$_____
U.S.D.A.	$_____
Labor	$_____
Expense	$_____
Total	$_____

Value of U.S.D.A. Commodities used $_____

Profit or Loss Statement
Month_____

1. Sales:	
2. Lunchroom sales to children	
3. U.S.D.A. claims received	
4. Lunchroom sales to other	
5. Lunchroom sales to needy children	
6. Total Sales	
7. Cost of Food Sold	
8. Inventory (beginning)	
9. Purchases (excludes U.S.D.A.)	
10. Total	
11. Inventory (end)	
12. Cost of Food Sold	
13. Operating Expenses	
14. Labor	
15. Equipment	
16. Miscellaneous	
17. Total Operating Expenses	
18. Profit or Loss	

10. Prices charged for lunches—
Children $_____ Adults $_____
11. No. days lunches served_____
11.A Total lunches to Adults_____

12.

Lunch Type	No. Lunches Served to Needy Children *Column 1*	Total Number Served *Column 2*	Assigned Rate of Reimbursement *Column 3*	Maximum Reimbursement (Col. 2 x Col. 3) *Column 4*
A-with Milk				$
				$
				$

13. Amount of National School Lunch Program Claim (Total of Item 12, Column 4)

SPECIAL SCHOOL MILK PROGRAM — SECTION B

14. Number of days milk was served_____
15. Price per ½ pint paid to distributor_____
16. Total number of ½ pints served to needy children_____
17. Charge to child –
Daily $_____ Weekly $_____ Adults $_____
18. Total number of ½ pints purchased during month covered by this claim _____
19. Number of ½ pints served: (a) To children in Type A lunch_____ PLUS (b) to adults_____ = _____
20. Total number of ½ pints served to children under the Special School Milk Program (Item 18 minus Item 19) _____
21. Rate of reimbursement per ½ pint of Milk _____
22. Amount of Special School Milk Program Claim (Item 20 x Item 21) $_____
23. TOTAL COMBINED SCHOOL LUNCH AND SCHOOL MILK PROGRAM CLAIM (Item 13 plus Item 22) $_____

Authorized agent, if other than superintendent, must have Certificate of Authority Form FP-7 on file at state office.

SIGN _____
(Program Supervisor)

For State Office Use Only

State Share (N.S.L.P.)	$
Federal Share (N.S.L.P.)	$
State Share (Special Milk)	$
Federal Share (Special Milk)	$
TOTAL AMOUNT PAID SPONSOR	$

I (We) certify that the plan for increasing milk consumption described in our application is in operation, and that this claim for reimbursement is true and correct in all respects and is in accordance with the terms of the existing agreement(s) and that payment therefore has not been received.

(Sponsoring Agency)

SIGN _____
(Authorized Agent)

_____
(Title) (Date)

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tage of the offer pay only a nominal handling charge. The Commonwealth's schools are using as many of these foods as is possible. However, several items of foodstuffs are not obtained because the school cannot economically process them. Therefore, the Bureau of School Food Services should contract with private industry to process these government-donated foods. They could then be commercially prepared into a more usable form or into a finished product.

Processing plants with excess capacity are available but single schools cannot interest industry into processing their needs. On a state-wide or regional basis, however, the volume would make it economical. For example, it is estimated that the letting of a state-wide contract for baking two-pound loaves of bread would save approximately $180,000 annually.

Other monetary savings will accrue by having the newly-formed Division of School Food Services similarly handle the following government commodities:

- ► Making dry milk and powdered eggs into cookies and pastries.
- ► Mixing and shaping ground beef into frozen hamburger patties or meat loaves for eventual reheating.
- ► Preparing boned, cooked, and frozen turkeys into rolls ready for slicing.
- ► Providing reconstituted orange juice which has been pre-packaged into four-ounce capacity disposable cartons.

5. The Bureau of School Food Services should redesign the Report and Claim for Reimbursement form by substituting a monthly balance sheet and profit and loss statement.

With minor modifications, the Report and Claim for Reimbursement, depicted on page 79, could provide a monthly profit and loss statement for the district. Few districts presently have a monthly picture of their costs. They do not know their costs until the end of the school year.

Monthly cost figures are a valuable management tool and show if corrective action need be taken on a more current frequency. Therefore, this report and claim for reimbursement form should be redesigned to make it more readily adaptable to an automated system.

To obtain a true cost picture, all direct and indirect charges attributable to the school lunch program must be charged to it. As districts move toward programmed budgeting, this will become more evident because school lunch programs operate on a revolving account. As program costs increase over income, smaller amounts of the obligation are charged to this account.

Direct costs are food, labor (including managers, directors, and food service clerks), equipment, and other items that are wholly attributed to the program. Indirect costs are hidden because only a portion of each is attributable to the program. These indirect costs are, however, very much a part of operating the school lunch. They include charges for telephones, utilities, office labor, maintenance, and rental of space required for the program.

These costs are still paid by the school district but they are made from the general fund. Therefore, it will cost the district no more to charge all attributable costs to the revolving account. An amount would then be budgeted from the general fund to the revolving fund to cover costs. Thus, all costs will be known by management and enable the district to make sound decisions concerning the program.

The cost of free meals is an item which should not be borne by the school lunch program. Because of the varying number of free meals served and methods of reimbursement, these lunches must be charged to the general fund. This is a further purification of the income and costs of the school lunch revolving fund.

A monthly check on the cashiers can also be made by using the Report and Claim for Reimbursement. The number of meals served, multiplied by the charges made for them will give a sales potential which should balance with the actual cash intake. This check will show if all monies have been accounted.

6. The Bureau of School Food Services should publish a suitable handbook for cafeteria personnel at the state level which would emphasize selection, motivation, and proper training of cafeteria employees.

A recent survey of school lunch programs in 50 states revealed over 50% of the replies indicated that training of employees was the most important factor in meeting production goals. Labor costs are rapidly increasing as a percentage of total school lunch operating costs and labor pools are shrinking due to competitive industrial jobs and higher wages. This study found similar problems throughout Massachusetts. Therefore, programs which recognize these elements and concentrate on expanding job content of the less skilled tasks will reduce worker dissatisfaction to a large degree. The cost of preparing such a handbook will be approximately $1,200.

Management Information System—Local

Local school administrators are burdened by increasing requests for information from taxpayers, the school board, the Department of Education, and the Legislature. Today, taxpayers want detailed building costs, program pupil costs, population and construction forecasts, and evidence of educational excellence. The school board seeks to understand the needs of an expanding school system while maintaining economic control. The Department of Education requires annual budgets from each district in a format that may be different than those the local district would prefer. The Legislature tries to support education but needs information to develop intelligent legislation. Most school administrators recognize these requests but, unfortunately, the quality of response has been varied.

This study found few school districts which consider the office staff and its data handling a system. However, every school district is trying to satisfy information needs. Their methods range from well-staffed computer installations to a single clerk, under the superintendent.

Response to the increased and varied information demands are evidenced by:

- Development of new budgetary methods such as Planning Programming Budgetary Systems (PBBS). A budget displayed in the classical sense no longer provides the information for effective planning and measurement of school program costs.
- Introduction of accounting and computer machinery at the local, regional, state, and federal levels to process massive statistics.
- Creation of a computerized Research and Development Center in the Department of Education.
- Grouping by some local school districts for the sole purpose of processing data.
- Establishment of data processing departments within many school systems.
- Use of systems and computer consultants throughout education management.
- Commercial service bureaus processing educational data.
- Statistical data developed as needed by the Massachusetts Teachers Association.

The single thread among these eight responses to information needs is the lack of coordinated effort amongst them.

Systems design should be based on the concept that a record be created a minimum number of times and the data it contains used frequently. The decision maker need not be concerned with how, where, or by whom the information is produced, provided it is timely and accurate. These form the parameters for evaluating the current status of educational data processing and management information.

EVALUATION

The choice and location of equipment and staff to provide information processing and long-range planning appear to be within the province of local school administrations. As a result, the degree of satisfaction is varied and has led some districts to employ specialists or consultants. Several districts have pooled resources to process data with accompanying economies.

The cost of processing data at the local level is rising. Much has been written to document the waste of dollars in uncoordinated attempts to reinvent the wheel in any area of data management. Thus, it is costly to continue on the present course of individual development. Most significantly, local school districts will continue to miss the goal of satisfying information needs at a reasonable cost.

The urgency of this problem is upon us. Some of the funds that supported local ventures into the field of data processing are drying up. It is reasonable to expect that a few local school districts will have a system meeting the demands for information as a result of their jumping-in at the beginning. Most will not have a system and time is running out.

RECOMMENDATION

1. **School administrations should develop and implement Local Educational Management Information Systems (LEMIS).**

Three factors bear on the implementation of this recommendation. First is the size of the development. This is important because development and implementation of systems must satisfy the needs of approximately 400 school districts.

Second is the current status of information processing at the local level because:

- Costs involved in gathering, arranging, and presenting information are not available.
- More than 75 districts are using their own or rented electronic accounting machines/

electronic data processing (EAM/EDP) equipment. Another third of the districts are using service bureaus, and many schools are sharing facilities in a neighboring district. This is done at annual rental and staff expense in excess of $2.5-million.

- There are approximately 400 different systems for information processing.
- There is no organization within the Department of Education to advise and guide local districts in areas of information processing, office systems and procedures, or data processing. The recommendation on Bureau of School Management Services, if adopted, will correct this. See the Manpower section on Resources for Public School Education.
- All local districts are involved in an information system, and the end of the year report to the Department of Education.

Third, is the level of local expertise. This problem must be considered because there are few qualified professional systems people at the district level.

For these reasons, the development and implementation of Local Educational Management Information Systems (LEMIS) must involve the following four steps to provide necessary data most economically.

Phase one, or introduction, is a one year period that would involve, at the local level:

- Appointment of a local coordinator to be responsible for all data flow including internal processing as well as service bureaus, cooperatives, Massachusetts Educational Management Information System (MEMIS), the Department of Education, and the community.
- Voluntary delay of contemplated computer additions, changes, or new data processing involvements during the initial phase one.

This period is not one of inactivity but rather like that described in the Manpower section on Resources for Public School Education as a period of vigorous activity at the state level establishing the links to the local level in MEMIS. The end of year report input from the district to the Department of Education and the annual report of the Department of Education as output from that agency require particular attention.

The local coordinator to be selected from within the system would ideally be a person with a background in systems analysis and data processing. Realistically, that will occur in only a few school systems. However, this should not be considered a serious handicap. The phase one period should be used by the coordinator to:

- Study and document the tab, computer, or manual information flow within the local system.
- Note the deficiencies within their systems.
- Actively be involved in the MEMIS study of the existing information flow such as the annual report.
- Participate in organizations such as Massachusetts Educational Data Processing Association (MEDPA).
- Contact local industry for professional systems help.

In summary, phase one involves the moratorium on the addition of data processing equipment, the development of a local coordinator, the understanding of the local information system, and its relationships with other systems.

Phase two, or development, begins at the end of the first year and requires a period of 18 months to develop and standardize adequate systems for local information needs.

As a result of information available from the documentation of local systems by local coordinators in phase one, MEMIS and a selected group of local coordinators must evaluate and choose those systems best suited to information needs. Where local systems are lacking or nonexistent, the resources of MEMIS, local school districts, other state Departments of Education, vendors, and business would be utilized.

In this study, many manual and EDP systems were found in the local information areas. Some of these areas of information meet legal requirements; others are or would be helpful in managing school business. The following list of applications indicates the diverse types of information necessary for local school management.

- *Students:*
  Scholastic information—grades, test scores, and progress.
  Census information—age, date of enrollment, attendance, and class scheduling.
- *Personnel:*
  Staff status—qualifications, teaching experience, accomplishments, and evaluation.
  Financial—payroll and retirement fund.
- *Fiscal:*
  Budget — current budget, balances, and history.
  Funding—local, state, and federal.
  Accounting.
  Insurance.

► *Facilities:*
Design and construction—date of construction, capacity, use, cost-original bid, actual cost, and replacement value.
Operations and maintenance — custodial costs, building utilization, and utilities.

► *Transportation:*
Vehicles—inventory, financial records, and usage.
Bussing — pupil location, scheduling algorithm, and analysis of contract versus ownership cost.

► *Purchasing:*
Cost and usage data.
Vendor analysis—history and performance.
Order status—open, late, and balance due.
Sources of supply—quality and quantity.

► *School Lunch Program:*
Personnel—staff status and financial information.
Procurement—source of supply and usage.
Financial—cost analysis, budget, and government aid.

► *Miscellaneous:*
Athletic programs.
Attendance services.
Collective bargaining.
Computer services.
Driver education.
Health services.
Library services.
Community relations.
Property and inventory control.

The systems developed for LEMIS must be suitable for manual as well as computer-based local districts. Systems must allow for a smooth transition from manual to computer operations and be suitable for more than one manufacturer's equipment configuration. There must also be standards and discipline in the systems to ensure information compatability between local districts, MEMIS, and the like, be they manual or computer based. Certain peripheral constraints, standards, and information for LEMIS should be the responsibility of the EDP service as established in the Manpower section of Resources for Public School Education. These must include:

► Proper computer, tab, or business machine configuration for business and educational purposes.

► Approved methods of equipment rental and purchase, and school discounts.

► Possible methods of staffing and job responsibilities in information processing areas.

► Available funding, both state and federal, as well as the status of all EDP or information systems projects.

MEMIS and the selected group of local coordinators would be responsible for:

► Documenting the standard systems.

► Upgrading systems to meet new and/or changed needs.

► Describing the multiple information needs for MEMIS as a requirement from each local school district.

► Describing the input-output requirements.

► Discouraging local districts from developing their own systems. Costs avoided by standardization are great if the previous list of applications being developed within each school district is considered.

Phase three, or testing, would begin at the end of 18 months. Its completion time would be one year to test the standardized systems. This segment would overlap the last year of phase two. It will become obvious as the local districts pass through these phases that they cannot economically solve their information needs by themselves. In addition, the larger systems may be hesitant to give up their partially established information systems for a compatible solution.

In order to avoid these problems, funding and considerable leadership will be necessary at the state level. Funding of two computer-based information systems—one for a cooperative of small school districts and the other for a large district—could provide a laboratory for testing the selected system's software. This would be done under the direction of the MEMIS staff with cooperation of the local coordinators.

A series of seminars, as these developments progress, to inform those coordinators not involved, would keep the two projects from becoming localized. The evaluation of the success of these projects should involve the coordinator's committee. That evaluation should be based on the local school's satisfaction with the information provided as well as the ease of input, timeliness, flexibility, and cost. From these two efforts, the modules of information processing systems would evolve to comprise the computer versions of LEMIS.

Phase four, or implementation, must begin no later than 30 months after the start of LEMIS and would be the implementation period for standard systems at the district level. Local systems must be implemented in a reasonable period of time in

order to meet the needs surveyed in phase one. This phase will involve a flexible MEMIS staff. Their posture must endorse cooperative data processing or the joining of districts to economically process information. They must be available to local districts for adjustment to standard systems to better meet local needs and troubleshoot any difficulties during implementation.

The success of the development of LEMIS, by the coordinators and the MEMIS staff, will be easily determined by the number of local school systems that implement standard systems. However, the ultimate test will be if the information needs of the users are fulfilled. Unless these requirements are realized, many of the benefits indicated in this report will not be attained.

Interfacing Systems

Up to this point, the major functions which come under the control of the business manager have been discussed. We have also investigated other activities which, although they are necessary elements in the operation of a school district, are not usually his direct responsibility. They do, however, touch upon many aspects of his operation. These we have elected to call Interfacing Systems. They are insurance, attendance services, health services, library services, property and inventory control, and staff travel.

Insurance

The function of insurance is to offer protection of the insured against loss of such severity that financial conditions are damaged. Exposures to loss of a size which can readily be absorbed by a town or city from current funds may, however, not justify coverage.

The effect of the nation's inflationary economy on salaries, materials, and equipment is keenly felt in school budgets. It is further aggravated by the cost to school districts for severe damage to buildings due to social unrest. Protection from large loss resulting from destruction of present properties has become of the utmost importance. Old school buildings that were not refurbished must now be modernized or replaced at greatly increased costs. Taxpayers should not be subjected to paying for replacement of valuable old buildings and also for new construction at the same time.

Good practice dictates careful, expert risk analysis, and development of the proper program of insurance or self-insurance to protect taxpayers from any catastrophic losses. However, conditions vary so widely in cities and towns that no single pattern fits all school systems. The problems are complex and their magnitude is indicated by the fact that there are some 3,188 school buildings owned by approximately 400 public school districts in Massachusetts. They have an estimated replacement value in the neighborhood of $3.8-billion. A single loss amounting to $17-million or $18-million is possible.

Costs of automobile liability and general liability cases, including products and malpractice, as well as workmen's compensation cases are increasing in cost, occasionally to hundred thousand dollar values. For years, sovereign immunity has protected Massachusetts' cities and towns from liability suits. However, Section 100C of the General Laws stipulates that a city or town shall defend and indemnify a teacher who may be personally sued for alleged negligence resulting in bodily injury or property damage. This provides the channel for municipalities to be forced to pay damage claims for accidental injuries caused by negligence of teachers.

It is immaterial whether the responsibility for placing insurance or paying losses belongs to the city or town rather than the school system since they own the properties and are the employers. The superintendent's office should, however, be consulted and advised. The peril of taxpayers, riots, vandalism, burglaries, and thefts in recent months have also multiplied the exposure to loss.

EVALUATION

School coverage, in most instances, is handled as a part of each city or town's insurance program. Communications between school administrators and persons placing coverage is frequently incomplete. The resultant programs vary from no insurance to good protection. "No insurance" does not qualify for the term "self-insurance" as no reserving or funding for losses is practiced.

Furthermore, some insurance programs are made complicated and unwieldy by a desire to favor several brokers by having each write a few small policies. Many other municipalities appoint one person as broker of record to supervise the program and split commissions among several local insurance agents or brokers. This patronage sys-

tem is frequently carried out at the expense of the city or town by eliminating those brokers or companies that could provide effective property appraisals, coverage improvements, and lower costs.

Competitive bidding is used occasionally. Oftentimes, it is not a planned procedure. Competitive bidding is essential in arriving at the right decision and the business should only be awarded to a broker or company that can and will render the needed services effectively.

Many school buildings which were erected in the 1890s or early 1900s have depreciated to a point where carrying no insurance may represent good judgment. On the other hand, the uninsured loss of any building, or particularly a modern multi-million dollar school, is a shock catastrophe which the taxpayers can ill afford.

Some school buildings are insured for their replacement value. However, on most insured buildings, their actual cash value (replacement cost less depreciation) is used. The insurable worth of properties is determined by occasional use of professional appraisers and an annual updating of values based on a statistical inflation cost factor. More frequently, underwriter's or broker's engineers assist in this valuation effort. However accomplished, the determination of proper building values on either replacement or actual cash-value basis is essential to establishment of proper coverage. Estimating insurable values is, too frequently, practiced by municipalities throughout the Commonwealth. This habit can produce overinsurance or underinsurance. Both of these conditions, particularly insufficient protection, are detrimental to the taxpayer.

A 90% coinsurance clause is usual in the Public Institutional Property (PIP) Form. Deductibles from zero up to $10,000 per loss are used. Larger deductibles, such as $50,000 or $250,000 and higher, may be available. They appear practical for use by cities, especially those without insurance coverage at the present time.

Most cities and towns do not carry general liability coverage on their school operations due to sovereign immunity from most types of suits in the Commonwealth. This is true despite the fact that teachers may be sued personally and the municipality is required by law to defend and indemnify the teacher against actions alleging negligence. Nevertheless, those that insure frequently carry very modest limits. Therefore, they are unprotected for a large damaging loss.

Minimal automobile liability coverage is usually carried. This, again, adversely exposes taxpayers to a large loss.

Many cities and towns self-insure their liability under the Workmen's Compensation Act. Most take advantage of the elective provision of the act and only provide benefits to laborers, workmen, and mechanics. School administrators, teachers, and nurses are, therefore, without this protection in many instances.

Today, conditions are unlike those of the past. Liability claims of all types are more frequently made. In addition, they cost large sums of money due to a claim-conscious public, huge medical bills, increased living costs, and liberal awards by generous courts. Workmen's compensation claims can now be measured in hundreds of thousands of dollars. Therefore, past experience should not be used as a guide to future practices.

RECOMMENDATIONS

1. **The Department of Education should create a position of Supervisor of Insurance.**

The purchase of insurance for school buildings, personnel, and vehicles is handled in municipalities by officials such as the mayor, treasurer, auditor, town manager, or selectman. Most commonly, no one in the office of the Superintendent of Schools is involved.

Someone with broad professional insurance experience should be hired at the state level to advise, counsel, and direct those responsible for placing all types of school insurance. It is desirable there be some degree of uniformity in the insurance purchased, whether or not the city or town decides to fully insure or partially insure with catastrophe coverage. Therefore, the supervisor should direct his efforts toward assisting municipalities to obtain the broadest coverage, best service possible, the lowest cost from nationally recognized companies, and a well-designed program. Implementation costs are estimated at $25,000 per year. Annual savings should more than cover the salary paid to the supervisor.

2. **The General Court should amend the law to make it mandatory for any municipality which does not carry primary insurance on its buildings and contents to purchase excess-loss coverage.**

Many cities and towns carry fire and extended coverage with and without deductibles. Although the General Laws, to some extent, provide for funding or payment of insurance premiums, several cities of this Commonwealth have no protection against loss due to fire, hurricane, tornado, vandalism, and the like. The taxpayer should not continue to be exposed to additional or potential taxation because of a catastrophe that could cost a school district as much as $20-million.

The dollar amount of per-occurrence retention of the city or town should be determined by each municipality. Additionally, the amount of excess-dollar coverage should also be decided by the municipality, but in no event should it be less than the sound insurable value of the most valuable building minus the retention or deductible. Across the state, the added costs would be more than offset by insurance-covered losses.

3. **The General Court should amend the Workmen's Compensation Act to make mandatory the provisions of the law to all local and regional district school system employees.**

The state-wide inequality that occurs because some municipalities broadly elect to include teachers while others decline to do so is unfair to omitted employees. All school districts in the Commonwealth have carefully arranged group accident and health coverage with Blue Cross and other carriers for payment of nonoccupational benefits to all employees. Therefore, it appears inconsistent that they have not furnished benefits of the Workmen's Compensation Act for occupational accidents. Annual costs to the state cannot be estimated.

4. **The General Court should amend the law to require municipalities not insured against liability for Workmen's Compensation to carry single accident excess insurance or reinsurance.**

A few towns and several of the largest cities in the Commonwealth do not purchase Workmen's Compensation insurance. In the event of serious injury to a person of long-life expectancy and many dependents, or a catastrophic occurrence involving more than one employee, the city or town would have to assess the taxpayer. This is not a sound position. Therefore, a policy should be purchased for a minimum of $500,000 in excess of $25,000 or $50,000 self-insured retention for each accident to eliminate such situations. Added costs of securing this coverage would be compensated by losses covered.

5. **The General Court should amend the laws to extend indemnification to all employees for expenses or damages resulting from an accident due to their own negligence arising out of their employment.**

The ever-increasing claim-mindedness of the general public emphasizes the narrowness of this particular section of the General Laws. The school department of a municipality is constantly exposed to hazards associated with directing and instructing children of many ages, operation of vehicles, as well as selling, preparation, and serving of food. In the event of a serious occurrence, a plaintiff's attorney would not hesitate to act against one or more school employees, including teachers. Implementation costs would be offset by losses covered.

6. **The General Court should amend the law to require that municipalities provide general insurance, including products and vehicle liability protection, with a minimum combined limit of $1-million per occurrence either by securing primary insurance or purchasing appropriate excess insurance coverage above a retention for each occurrence.**

A section of the General Laws requires a city, town, or regional school district to "indemnify a teacher in its employ for expenses or damages out of any funds appropriated for the purpose." However, very few municipalities carry general and vehicle liability coverage or appropriate funds to protect the liability of teachers or other employees for alleged negligence which causes bodily injury, property damage, or personal injury.

It is recognized that sovereign immunity from suits does not apply to individual teachers or other employees. Therefore, their daily exposure to claims or suits from students and parents arising out of instructional and noninstructional duties, including the serving of food, could be very costly to the taxpayer.

7. **The General Court should create a state trusteeship which will be the insuring entity for the single packaging of group health and life insurance for all school employees and other municipal and county employees.**

There are now about 300 health contracts and as many life contracts in effect for governmental units throughout the state. Depending upon the size of each insured plan, the insurance company expense loading will fluctuate. The aggregate gross premium, including life insurance, for these contracts is estimated to be in the vicinity of $50-million. The writing of one state-wide plan encompassing the variation of rates and benefits by county, in addition to stimulating company competition, would reduce this expense loading to a point where annual savings of $2-million to $5-million are possible. To equalize all insurance bids, the state premium tax should either be included or excluded uniformly. Further, commissions to be paid to agents or brokers must be excluded.

Attendance Services

Public school systems in the state seek to ensure that all persons required by law to attend school are, in fact, doing so. Children between the ages of seven and 16, with certain exceptions, must attend some approved school. Furthermore, it

is the responsibility of the school committee of each town to provide for and enforce attendance of all children actually residing therein.

There are three separate but related functions involved in the enforcement of attendance rules. These are a census of school-age population, daily maintenance of attendance records in schools, and special responsibilities of a supervisor of attendance.

Each town's superintendent of schools is required by law to file an annual statement with the Commissioner of Education, by December 1 which reports the number of minor children who were in full-time attendance at some school as of October 1 of that year, and whose parents or guardians were residents of the town. This record is compiled in a number of ways throughout the state.

Attendance, which was once taken by the teacher, summarized on the report card, and reported to the principal for disciplinary action when the instructor suspected problems, has been transformed markedly. Today, there are several computer service bureaus offering sophisticated attendance systems, and one of the first tasks undertaken by schools with unit record equipment or computers is the attendance system. A total of 71 schools, in answer to a state survey, indicated use of data processing equipment in attendance registers. The legal requirements for these statistics have changed a reasonably accurate and simple system into a time-consuming and expensive method. Thus, the original motivation by the state to enforce attendance through legislation has been nullified.

Each school committee is required to appoint one or more supervisors of attendance, more commonly considered as truant officers. However, in some cases their responsibilities go well beyond that of being policemen. In small towns, it is common practice for a policeman to be employed as a part-time attendance officer and receive a salary from the school system. In other cases, a local officer performs this work as part of his normal duties.

A 1969 study by the Massachusetts Advisory Council on Education (MACE) entitled Pupil Services in Massachusetts Schools indicated all but one of the supervisors in the sampling of 28 school districts had less than a bachelor's degree. The most frequently mentioned position held prior to or concurrent with appointment as a supervisor was with a law enforcement agency.

EVALUATION

All towns and cities in the Commonwealth are required by law to compile an annual census of school-age children. Since the towns' lists include only persons who are 20 years of age or older they are, by themselves, not useful for school purposes. Therefore, the most complete school census is accomplished by door-to-door canvassing of all residences included in the lists of these population centers. Canvassing is normally performed by part-time workers who are compensated either on an hourly basis, a flat salary, or on the number of persons they count. It is not uncommon for canvassers to be school staff members. In a few cases, the door-to-door work is done as a project of a high school class.

In some towns, information on persons under 20 is collected when the street lists are compiled. However, such complete listings do not conform with the school census and street-list laws. The state regulations stipulate the census must be compiled during the first two weeks of October and the street listings are completed during January and February.

The most common source of data on school-age population is the list of enrolled pupils which is supplemented by tips on nonregistrants from phone-callers and other students. If the purposes of the census are to aid enforcement of attendance laws and help school systems estimate future facility requirements, this procedure appears to be inadequate.

There are several reasons why attendance records are maintained for indefinite periods of time in schools across the state. These data are frequently stored in bound volumes at a cost of $30 each.

- Statutes require the current attendance system. Chapter 72, Section 8 stipulates that the attendance register, under the direction of the superintendent, be maintained at the schools and kept open for inspection by the supervisors of attendance, the commissioner, and agents of the department.
- The law is also quite specific about the calculation of the net average membership which is used by the state in its computation of school reimbursements.
- These data are needed to establish the whereabouts of a student involved in court action if a question should arise as to his having been in school at the time.
- Such information is required to ascertain teachers' teaching records in a school.
- Records are used to establish birth dates for various purposes such as social security.

It is questionable if these reasons justify the money and time being expended beyond the class-

room and the guidance department to compile these data. Most school districts do not have a sufficiently large number of attendance problems to justify a full-time employee, and rarely do school districts share an attendance officer.

The qualifications for state certification of a supervisor of attendance are such that a person with any training or experience in guidance work is a rarity. A working relationship between guidance and attendance personnel is unusual.

RECOMMENDATIONS

8. **The General Court should amend the law so the school census and town listings might be taken simultaneously and require town officials responsible for compiling street lists to collect information on all residents.**

The listing of all occupants of a residence, rather than only those over 20 years old, would add little to the cost of a town census. It would also provide useful data on pre-school children as well as those who should be attending school.

Inasmuch as the school fiscal year will begin on July 1 in the future, a census of children taken early in the year—rather than in October—would be useful in planning the school budget. Since about 50% of the 1.3-million pupils in the Commonwealth are counted in a separate school census, elimination of the duplication could save $162,500 per year based on half of the pupils at $0.25 each. In districts where the school count is founded upon records of pupils attending schools, phasing out the compilation would offset whatever additional clerical burden is placed on those who compile the town lists.

9. **School administrations should designate guidance personnel as supervisors of attendance and, where possible, shift disciplinary aspects of the position to local police departments.**

Many duties a supervisor of attendance is required to perform are more closely related to guidance and counseling than law enforcement. Therefore, such tasks could be handled better by staff members who have training and experience in guidance work.

If some of these responsibilities were shifted, the time required for enforcement of school attendance laws would be decreased and could be transferred to the local police department. A local police officer, preferably one who is dealing with juveniles, would then be performing duties which are now being done, often by the same officer as a part-time, extra-income job. This action would provide a desirable linking of guidance and attendance work functions.

10. **The General Court should base local school aid on pupil enrollment for October 1 rather than on net average membership attendance by amending Chapter 70, Section 4 of the General Laws.**

This change in the basis for aid to local schools in the Commonwealth should accomplish the following:

- Provide no appreciable change in distribution of funds from the state to the local community. The formula adjustment must assure this.
- Return the emphasis or need for attendance statistics to the teacher, local administrator, truant officer, and the director of guidance.
- Eliminate a mass of statistics which are now summarized, displayed, and analyzed with no value to the contributor and of doubtful use at the state level. Thus, the cost of passing attendance information beyond the local school would be saved.

Lateness and absence are quickly noted in the classroom. Teachers and guidance directors have indicated that the chronic absentee, the youngster with a health problem, the delinquent, and the emotionally disturbed child are known to the schools. Attendance is a reinforcing measurement. However, the numerical summaries of absence and the rush to data processing systems and service bureaus to compile statistics have tended to display numbers that lack dialogue for knowledgeable people. They are unable to determine why the absence occurred or if it will happen again.

Attendance taken by the teacher, acted upon by the teacher or principal, summarized on office records and report cards, and stored for one year should provide an adequate attendance-monitoring system. Implementation will provide annual state-wide savings of at least $130,000.

Health Services

Health services are provided to all school children in the Commonwealth either by school district employees or local Board of Health personnel. The specific services vary only slightly between districts because most functions performed by school doctors and nurses are prescribed by the Department of Health and by Massachusetts statutes.

All districts have one or more school physicians under contract on a part-time basis. These doctors examine students at least once every three years and check over those who would compete in interscholastic athletics. They are, however, available for emergencies.

There are close to 1,000 school nurses in the state. About half are employed by the schools while the other half are assigned to the schools by local Boards of Health. Their responsibilities include testing eyes and ears, weighing and measuring all public and parochial students each year, and maintaining student records. Also, they arrange clinics at which local Boards of Health innoculate all students requiring it. In addition, they administer first-aid and, to varying degrees, participate in health education and counseling programs. The total cost of school nurses to the state in 1969 was approximately $6.5-million.

Certain school districts also provide dental hygiene services, dental and optometric examinations, speech and hearing therapy, as well as psychiatric and psychologic care.

EVALUATION

While the health services provided to students are quite uniform, accessibility to doctors and nurses varies greatly. The American Nurses Association recommends one school nurse for no more than 1,300 students. However, actual ratios in the school districts range from one per 800 students to one per 2,500. Participation of school physicians in education programs is rare and that of nurses is virtually negligible. In the case of nurses, the most obvious reason is a shortage of time. The clerical burden on school nurses is great and can absorb as much as 90% of the nurses' time. In addition, the testing and measuring requirements can be performed by persons with less training than a registered nurse.

Doctors and nurses, when assigned to schools, are under the supervision of the superintendent who retains the many responsibilities imposed by statutes. Both doctors and nurses are available for classroom instruction when their specialized knowledge in fields of hygiene, sex education, drug use, and the like is desirable.

Nurses employed by the schools normally have a work year which coincides with the school year. On the other hand, local Board of Health nurses who are assigned to the schools have additional responsibilities during school vacation periods.

RECOMMENDATIONS

11. School administrations should use nonprofessional adults on a part-time, full-time, or volunteer basis to perform clerical and other nonprofessional work tasks which consume much time of school nurses.

School nurses often maintain that their ability to contribute to educational programs as well as provide additional health services is minimized by the lack of available time. Therefore, use of adults with less professional training than given to registered nurses would either produce this extra freedom or permit a reduction in the number of nurses. Since implementation of the former is more likely to occur, it would permit school nurses to make a greater contribution to the school program and broaden their role in the area of pupil services.

Personal information included in the health files requires those handling these data be discreet. However, it does not follow that only professional nurses are sufficiently judicious. Therefore, nonprofessional persons could, with competence and discretion, do many of the tasks now performed by the school nurses.

Savings to each school district will depend upon their individual health organization. Nurses would have increased time for performance of their professional duties. This could result in eliminating some part-time nurses or make it unnecessary to hire additional nursing capability as the need increases.

12. Cities and towns should make local health agencies responsible for health services in all public schools.

School nurses work closely with public health nurses, especially in the conduct of innoculation clinics. Public health nurses, in many cases, may be able to perform more effectively in the school system because of familiarity with the community, homes, and the students. School-employed nurses, in almost all cases, work the school year and take the customary vacations. On the other hand, town-employed nurses work the calendar year and are granted less vacation time. Therefore, if all school nurses and physicians were under the jurisdiction of the local Board of Health, the board would have greater flexibility in assigning professional personnel to various functions. Freedom to substitute public health nurses for school nurses during the school year, and conversely during vacation periods, would contribute to a more efficient and effective use of the community's health resources.

In addition, it may be that some of the responsibilities and most of the vacation periods of public health nurses could be shifted or otherwise transferred to those days when school nurses would otherwise be idle.

Arrangements through which school systems employ local physicians on a part-time basis differ greatly. In many cases, they are unsatisfactory in terms of availability of doctors and cost to the schools. For the schools to use doctors who are

employed full-time by the local Board of Health would be advantageous. In some cases, it might permit the Board of Health to maintain a full-time doctor on its staff.

In proposing a shift of health service responsibility from schools to local health officials, it is intended the health personnel, when assigned, would continue to be directly responsible to the Superintendent of Schools. However, the superintendent would be freed of the budgeting and administrative problems; they would, in turn, become responsibilities of the community health agency.

Shifting the budgeted expense from the school budget to the municipal budget will not, in itself, save money. Consolidation of health services, however, should result in a savings due to more effective use of doctor's and nurse's time over the entire year.

Library Services

Most high schools and junior high schools in Massachusetts have central libraries in their buildings. About 50% of the elementary schools also have libraries within their buildings.

Certain trends are apparent in library services provided in the public schools. One is the steady increase of expenditures which exceeded $8-million in 1969. Another is the effort of many school districts to provide a central, professionally-staffed library in every school by replacing both room libraries and reliance upon public libraries and bookmobiles for materials. Third, there is a distinct direction toward extending existing libraries. Thus, library services are quite different from what they were in the past.

A more accurate title for what once were libraries would be instructional media centers. These units are, in many cases, providing a wide range of services and facilities associated with changing teaching methods. Further, there has been a proliferation and availability of many types of learning aids.

The first trend, that of increasing expenditures, is explained primarily by the growing number of students. Additionally, the steadily rising levels of professional salaries account for 62% of all library expenses. However, the use of volunteers in about half of all school districts has kept expenditures from escalating higher.

The trend of replacing room libraries by central libraries has been accelerated by availability of federal funds under Title II of the National Defense Education Act. These funds, plus increased use of volunteers have contributed to improvement of library services, particularly in the elementary schools. They are encouraging the purchase of more books as well as providing help in staffing additional central libraries.

The trend of libraries becoming instructional media centers is creating a higher level of expenditures for equipment and materials. These centers, in addition to providing books, make film strips, slides, films, projection equipment, tapes of cultural material and learning programs, art prints, and records available upon request. They operate as workshops where the student can learn at his own speed. These centers also provide almost unlimited opportunities for teachers and students to utilize modern teaching methods.

EVALUATION

The great expansion of learning and teaching resources is a major factor in increasing the cost of education. It emphasizes the need for schools to pool their resources more effectively. At present, there is very little centralization in any area of library services, whether in selection of materials, purchasing, or processing.

Even though the schools in Massachusetts spend over $2-million annually for library supplies and materials, little attempt is made to capitalize on the size of purchases. Within a district, each school generally prepares its own book orders and, most commonly, they are placed with a book jobber who offers a standard discount.

The processing of books in about 60% of the schools is performed by trained librarians. This is a time-consuming operation. Virtually all librarians expressed a conviction they are unable to perform many desirable and necessary professional services because of a lack of time.

In many cities, where little communication exists between school and public librarians, some undesirable duplication of orders and facilities exists. Such duplication, especially of expensive reference works, could be eliminated by better coordination.

A serious and costly repetition occurs when more than one school in a system, or even within a region covered by several systems, owns expensive resource materials as well as teaching and learning equipment which is not intensively used. The extent of such duplication represents a waste of expenditures. In other cases, the cost of materials and equipment which will not be intensively used represents an exhorbitant cost. This discourages the use of teaching and learning techniques which may be educationally desirable.

RECOMMENDATIONS

13. School committees should coordinate the purchase and processing of materials on a regional basis.

Most school systems are not large enough to purchase library materials at the best possible price. Therefore, consolidation of orders by a group of school systems would be beneficial and would not present great administrative difficulties. The idea of buying library materials on a regional basis might well include purchases by public libraries. It could be an effective means to minimize unnecessary duplication of purchases within an area.

Currently, practically all school systems place their orders with book jobbers. On most items, they receive discounts which range from 25% to 40% of listed prices. It is unusual for these orders to be put up for competitive bids by the jobbers. Joint purchasing efforts would provide a larger and more attractive package to the jobbers. Thus, a reduction in price could be anticipated.

As suggested by the American Library Association and others, the processing of materials could also be performed more efficiently if it were centralized. An alternative, but one that is rather costly, would be for school libraries to make greater use of the processing services and processing kits offered by most jobbers. Presently, about 60% of the processing is done in the school libraries, most frequently by the librarian. In some instances, volunteer workers perform these duties.

In addition to the time required to process books, space requirements often present an acute problem. Insufficient work areas are often clogged with newly-acquired books. While awaiting processing, they are not on the shelves where they can be used. Centralized processing would reduce the time required to get newly-acquired books on the shelves.

Public libraries generally direct their programs toward a different clientele than do the schools. Therefore, some overlap and duplication is desirable. However, unnecessary duplication, particularly of expensive reference materials, is wasteful. A wide distribution of information describing which libraries in an area have particular reference works would eliminate the need for some duplication. Additionally, the exchange of purchase order copies could eliminate more repetition.

Transformation of libraries into instructional media centers encourages pooling of resources, especially audio and visual equipment. It may make pooling imperative if certain teaching aids are to be made available to others than the most wealthy school districts.

One regional instructional media center, serving six towns in southeastern Massachusetts, is presently in operation. Project SPOKE was originally funded by a federal grant under Title III of the NDEA. This facility represents a pooling of educational materials and an accommodation where teachers can increase their skills and develop instructional aids. It clearly provides facilities which none of the six communities could have or would have provided independently. The project has been enthusiastically received by educators in all the communities involved.

At present levels of library expenditures, a savings of only 10% would make an additional $200,000 available for instructional media materials.

14. The Department of Education should promote the concept and establishment of regional instructional media centers.

The Department of Education should provide financial assistance to schools who participate in such projects. The experience of Project SPOKE would indicate that many towns are anxious to be part of such a plan. The use made of this project by teachers is a demonstration of the educational need which the center has been filling. In 1969, the state provided $825,000 for regional libraries whose services are addressed primarily toward public libraries. This direction of effort has been justified because of the availability of NDEA funds for school libraries. However, recent reductions of those federal funds makes the revival of state financial concern of prime importance to school libraries. Consequently, support for regional media centers would be appropriate and productive. Regional centers provide the least expensive method of providing adequate instructional media centers.

15. The Department of Education should establish a program to provide a system of mutual support among all libraries.

Research material varies widely as to frequency of use, although constant availability is essential. There is no need for a large number of libraries to hold identical and infrequently used reference works if they have full knowledge of their availability, and know they have full access to them. For instance, elementary school libraries might be backstopped by high school and public libraries. Additionally, high school libraries could be backed-up by public, university, or state libraries. Such an arrangement requires overall planning and coordination. The Department of Education, through its Bureau of Library Extension, already is involved with all libraries. The department should disseminate complete information on location and availability of research materials of

interest to all libraries. With this knowledge, librarians can adjust their orders accordingly.

This type of joint usage of infrequently used materials is already being done, specifically through Project SPOKE. The benefits now enjoyed by the six towns involved in that project (such as the use of a film library and a library of journals, and copying facilities) should be extended to all communities.

16. School administrations should improve the availability of library materials and facilities.

Just as important to efficient library operation as cutting of costs is increased use of existing facilities. Three methods would be to:

- Shorten the time required to get new materials into circulation. For this, centralized processing, or increased use of preprocessing services and kits is suggested.
- Use volunteers to allow libraries to remain open more hours per day. Such action will also expedite the return of books.
- Encourage students to check out books during vacation periods. One school library found that only three books were lost even though more than 5,000 titles had been withdrawn for the entire summer vacation period. This is a small price to pay for the educational support to children.

Property and Inventory Control

A formal definition of property control could be the accounting for property through a system of records, physical inventories, and reports. Simply stated, it is a system for recording what is owned, where it is, its worth, and how much use a particular item receives.

Sound property control practices are of extreme importance. They will provide:

- Valuation of property for insurance protection against fire, vandalism, theft, and so forth.
- A record for police information in theft investigation.
- An aid for budgetary and planning purposes of purchasing, replacement, and the like.
- Evaluation of the adequacy of holdings and comparison of property with other schools.

Property control systems can be extremely detailed and require EDP facilities. They can also be simple manual systems. The best method depends largely on the amount of property and the detail required.

Property control systems cost money to implement and maintain. Nevertheless, costs can be justified if they:

- Allow recovery through insurance of the true value of property losses due to fire, vandalism, and other acts.
- Significantly decrease overall equipment requirements through increased utilization.
- Effectively enhance the ability of management to direct, plan, and control operating procedures through increased knowledge of the present property situation. A typical example would be budget preparation.

It is good business practice to have an adequate property control policy. Lack of a proper system often leaves management exposed to losses and inefficient use of equipment.

EVALUATION

Property control as practiced in Massachusetts' school districts is poor. Approximately 45% of the districts studied have an inadequate property control record. Some 34% have no record, and 21% have records which are not kept up to date. Of those that maintain a record, 40% rely on an informal annual inventory list prepared by teachers, while 28% have a more formal system for updating records.

Inadequate records leave the school districts subject to underinsurance. Furthermore, they run the risk of unknown financial expenditures because values of known losses due to fire or other reason cannot be substantiated. In those districts with relatively good records, an aggressive individual was involved in the insurance program. Most districts are not large enough to justify elaborate property control systems to obtain adequate savings opportunities through improved utilization and lower investment. Regionalization could present this opportunity and, perhaps, justify extensive property control systems using electronic data processing techniques. Such systems could provide transfer of equipment from school to school and significantly reduce equipment investment. Until school districts reach sufficient size to computerize property control, manual records should be established and maintained.

RECOMMENDATION

17. School administrations should install property control systems within each school district.

The simplest system can start with two records. First, an annual inventory list, as shown dir-

CLASSROOM INVENTORY

TOWN — Anywhere Massachusetts — Date 6/15/70

BUILDING — Number and Elementary

ROOM NO. — 42 — Teacher — Miss Jones

Description of Item	Number On Hand	Condition—Number G	F	P	Value Unit	Total
File Cabinets—3 drawer	4	2			$25	$130
wood			2		40	
First Reader—Textbook	16		16		$ 2	$ 32

ectly above, hould be prepared by the teacher covering all items in her classroom. Compiled close to budget preparation time, the list should contain a description of all items located in the room and the number of each. Further, it should indicate their condition. A copy of this inventory should be maintained by the school's principal. Additionally, a master file of all inventory lists should be maintained in the superintendent's office. The value column should be filled in by the superintendent's office as a guide to the value of contents needed for insurance coverage.

Second, an equipment record card, as illustrated below, should be maintained by the superintendent's office for all pieces of equipment costing $100 or more. The card record should indicate the following information:

- ► Type of equipment.
- ► Manufacturer and model number.
- ► Serial number.
- ► Description.
- ► Ownership if other than the school district (e.g. ESEA Title III equipment).
- ► Location of the equipment.
- ► Listing of original cost, new, supplemental equipment, and repair record.

This equipment record card can be checked annually with the inventory lists. Any movement of equipment from one location to another should be reported immediately to maintain correct information on the record card.

In some instances, the district may wish to implement a numbering system. Use of a pressure-sensitive label having its own identification number will provide an inexpensive means of identifying the equipment. Consideration should also be given to use of a small pressure-sensitive label attached in an unlikely place on the equipment.

EQUIPMENT RECORD

TYPE: Typewriter

MANUFACTURER AND MODEL: Royal - Electric No. 450

SERIAL NUMBER: 75423E

DESCRIPTION: Gray - Pica Type - 10 Pitch - 20 - in. Carriage

OWNERSHIP: District

DATE	LOCATION
9/15/70	Central High - Room 305

DATE	DESCRIPTION	ITEM COST		ACCUM. COST	
9/15/70	Original Cost	525	00	525	00
	Additions - Description				
	DISPOSAL				

REPAIRS		
DATE	DESCRIPTION	COST

This has proven very helpful to police departments in tracing stolen property. Such labels are often overlooked even though serial numbers may have been changed.

Staff Travel

School districts in Massachusetts pay expenses for school committee members, superintendents, business managers, principals, teachers, and staff members to attend various conventions, seminars, and study groups. Expenses of those who travel within the district in their private automobiles are usually reimbursed on a mileage basis or through an annual stipend.

While the purpose for this travel is generally considered worthwhile, a wide variance in policy administration has developed. Amounts appropriated for in-state travel range from $8,000 in some communities to less than $500 in others. Similarly, the sums allotted for out-of-state travel vary from over $15,000 to under $100. In both categories, such funding is not necessarily related to the size nor the total budget of the school districts. To a lesser degree, this pattern also applies to intradistrict travel. Most communities reimburse their staff members at the rate of $0.08 a mile while others allow $0.10 per mile. A few stipulate lesser amounts down to $0.055 per mile. Some districts allow a stated amount with no relationship to mileage traveled; that is, stipulated sums are given to staff members whether they are used or not.

In most districts, no restriction is placed on amounts spent for food and lodging as long as they are reasonable. However, no published guidelines define the word reasonable. All districts demand written expense reports and most require receipts for lodging. Usually, the report is a handwritten request for reimbursement in no pre-established form. If petitioned, some districts will advance cash for travel.

The amount requested for travel is approved by the school committee as a lump sum in certain districts. Then, it may be expended as the superintendent directs. However, in others, amounts are approved in detail or by name, and no transfer of funds is allowed. Notwithstanding, only a few districts require those attending specific functions to file a written report and make it available for the benefit of associates.

EVALUATION

There is no overall policy for guidance of administrators in most communities. The absence of a written policy contributes to the discontent of professional people, and could be a time-consuming factor in contract negotiations. Further, no information is available for use by school administrations to establish policies of staff travel relating to who travels, where, when, and at what cost.

RECOMMENDATION

18. School committees should establish written policies governing travel and reimbursement regulations for school district personnel based on guidelines to be developed by the Department of Education.

The reluctance of some districts to require an employee to file a written report on a meeting attended, defeats the primary purpose of the effort. Such a report could and should record information of value to others having similar interests. Therefore, policy governing who may travel and when should be firmly established before it becomes an item for contract negotiations. Furthermore, expense forms for reporting travel costs should be uniform in content and format. In addition, reporting of cost items should be detailed and complete.

The Department of Education should establish guidelines on staff travel for the administrators in formulating policies. Local districts could then establish a firm policy designating who should travel, where, when, and at what cost. Items for consideration include:

- Preparation of guidelines to encourage participation in professionally oriented programs.
- Definition of allowable expenses.
- Determination of per-diem allowances for food and lodging.
- Establishment of a fixed per-mile rate for use of personal vehicles.
- Definition of procedures regarding the granting of monetary advances prior to travel.
- Development of a standard expense report form.
- Requirements for reporting on meetings which have been attended.

In a similar manner, written policy governing the use of leased or school-owned vehicles in the conduct of intradistrict school business should be developed to provide:

- A clear definition of circumstances under which district-owned equipment is used.
- An assignment of responsibility in operation of any vehicle.
- A form for reporting use of any vehicle on school business.
- Other regulations necessary to protect the district and the vehicle operators.

Section V

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